CONTENTS

MICRO COMPONENT SYSTEM

1. SERVICING PRECAUTIONS 3
2. ESD PRECAUTIONS 5
3. SPECIFICATIONS 6
4. ADJUSTMENTS 8
5. MAJOR WAVEFORM 11
6. TROUBLESHOOTING GUIDE 14
7. BLOCK DIAGRAM 19
8. SCHEMATIC DIAGRAM .... 20~23
   - FRONT & KEY CIRCUIT 20
   - AMP & DECK CIRCUIT 21
   - TUNER CIRCUIT 22
   - CDP CIRCUIT 23
9. WIRING DIAGRAM 24
10. PCB LAYOUTS .... 25~26
   - MAIN P.C.BOARD 25
   - CDP P.C. BOARD 26
11. INTERNAL BLOCK DIAGRAM OF ICs 27
12. EXPLODED VIEW/PARTS LIST .... 38~40
   - CABINET 38
   - TAPE DECK MECHANISM: AUTO STOP DECK 39
13. REPLACEMENT PARTS LIST .... 41~52

SPEAKER SYSTEM

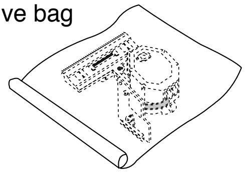
1. SPECIFICATION 53
2. SCHEMATIC DIAGRAM 53
3. EXPLODED VIEW/PARTS LIST 54

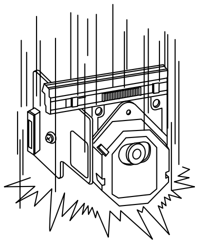
SERVICING PRECAUTIONS

NOTES REGARDING HANDLING OF THE PICK-UP

1. Notes for transport and storage

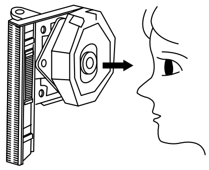
1) The pick-up should always be left in its conductive bag until immediately prior to use.
2) The pick-up should never be subjected to external pressure or impact.


Storage in conductive bag

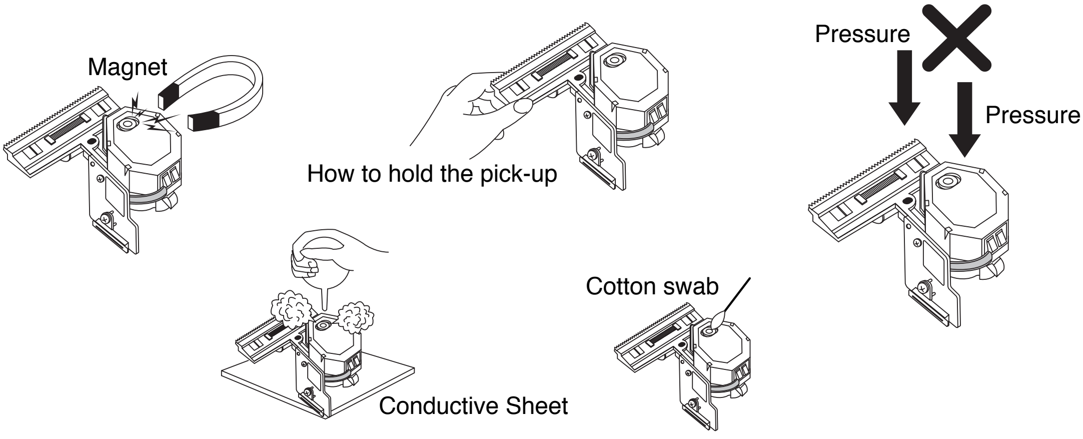

Drop impact

2. Repair notes

1) The pick-up incorporates a strong magnet, and so should never be brought close to magnetic materials.
2) The pick-up should always be handled correctly and carefully, taking care to avoid external pressure and impact. If it is subjected to strong pressure or impact, the result may be an operational malfunction and/or damage to the printed-circuit board.
3) Each and every pick-up is already individually adjusted to a high degree of precision, and for that reason the adjustment point and installation screws should absolutely never be touched.
4) Laser beams may damage the eyes!
   Absolutely never permit laser beams to enter the eyes!
   Also NEVER switch ON the power to the laser output part (lens, etc.) of the pick-up if it is damaged.


NEVER look directly at the laser beam, and don't let contact fingers or other exposed skin.

5) Cleaning the lens surface
   If there is dust on the lens surface, the dust should be cleaned away by using an air bush (such as used for camera lens). The lens is held by a delicate spring. When cleaning the lens surface, therefore, a cotton swab should be used, taking care not to distort this.



6) Never attempt to disassemble the pick-up.
   Spring by excess pressure. If the lens is extremely dirty, apply isopropyl alcohol to the cotton swab. (Do not use any other liquid cleaners, because they will damage the lens.) Take care not to use too much of this alcohol on the swab, and do not allow the alcohol to get inside the pick-up.

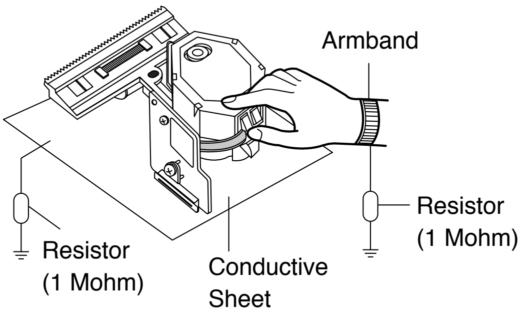
NOTES REGARDING COMPACT DISC PLAYER REPAIRS

1. Preparations

1) Compact disc players incorporate a great many ICs as well as the pick-up (laser diode). These components are sensitive to, and easily affected by, static electricity. If such static electricity is high voltage, components can be damaged, and for that reason components should be handled with care.
2) The pick-up is composed of many optical components and other high-precision components. Care must be taken, therefore, to avoid repair or storage where the temperature of humidity is high, where strong magnetism is present, or where there is excessive dust.

2. Notes for repair

1) Before replacing a component part, first disconnect the power supply lead wire from the unit
2) All equipment, measuring instruments and tools must be grounded.
3) The workbench should be covered with a conductive sheet and grounded.
   When removing the laser pick-up from its conductive bag, do not place the pick-up on the bag. (This is because there is the possibility of damage by static electricity.)
4) To prevent AC leakage, the metal part of the soldering iron should be grounded.
5) Workers should be grounded by an armband (1MΩ)
6) Care should be taken not to permit the laser pick-up to come in contact with clothing, in order to prevent static electricity changes in the clothing to escape from the armband.
7) The laser beam from the pick-up should NEVER be directly facing the eyes or bare skin.



ESD PRECAUTIONS

Electrostatically Sensitive Devices (ESD)

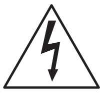
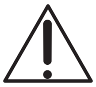
Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive Devices (ESD). Examples of typical ESD devices are integrated circuits and some field-effect transistors and semiconductor chip components. The following techniques should be used to help reduce the incidence of component damage caused by static electricity.

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ESD devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ESD devices.
4. Use only an anti-static solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ESD devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ESD devices.
6. Do not remove a replacement ESD device from its protective package until immediately before you are ready to install it. (Most replacement ESD devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive materials).
7. Immediately before removing the protective material from the leads of a replacement ESD device, touch the protective material to the chassis or circuit assembly into which the device will by installed.

CAUTION : BE SURE NO POWER IS APPLIED TO THE CHASSIS OR CIRCUIT, AND OBSERVE ALL OTHER SAFETY PRECAUTIONS.

8. Minimize bodily motions when handing unpackaged replacement ESD devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ESD device).

[CAUTION. GRAPHIC SYMBOLS]

	THE LIGHTNING FLASH WITH APROWHEAD SYMBOL. WITHIN AN EQUILATERAL TRIANGLE, IS INTENDED TO ALERT THE SERVICE PERSONNEL TO THE PRESENCE OF UNINSULATED “DANGEROUS VOLTAGE” THAT MAY BE OF SUFFICIENT MAGNITUDE TO CONSTITUTE A RISK OF ELECTRIC SHOCK.
	THE EXCLAMATION POINT WITHIN AN EQUILATERAL TRIANGLE IS INTENDED TO ALERT THE SERVICE PERSONNEL TO THE PRESENCE OF IMPORTANT SAFETY INFORMATION IN SERVICE LITERATURE.

SPECIFICATIONS

1. AMP SECTION

1) Output Power(4Ω, 2ch, T.H.D 10%)	5W + 5W
2) T.H.D	0.15%
3) Frequency Response (3dB down)	40Hz~20kHz
4) Signal-to-noise Ratio	70dB
5) Input Impedance	47kΩ
6) Input Sensitivity	400±30mV
7) Separation(AUX) 100Hz/1kHz/10kHz	50dB/50dB/40dB

2. TUNER SECTION

(1) FM(OIRT)

1) Frequency Range(50kHz or 100kHz Step)	65.0MHz~74MHz, 87.5MHz~108MHz or 87.5MHz~108MHz
2) Intermediate Frequency	10.7MHz
3) Sensitivity 90/98/106MHz	11dB
4) Signal-to-noise Ratio (Mono/Stereo)	55dB/50dB
5) Image Rejection 106MHz	38dB
6) IF Rejection 90MHz	65dB
7) Distortion (Mono/Stereo)	1.0%/1.2%
8) Frequency Response (-3dB)	60Hz~10kHz
9) Separation 100Hz/1kHz/10kHz	25dB/25dB/20dB

(2) AM(MW)

1) Frequency Range(9kHz or 10kHz Step)	522(530)kHz~1611(1720)kHz
2) Intermedite Frequency	450kHz
3) Usable Sensitivity 603/1008/1404kHz	56dB
4) Image Rejection 1404kHz	25dB
5) IF Rejection 603kHz	48dB
6) Selectivity 1008kHz	28dB
7) Signal-to-noise Ratio 1008kHz	40dB
8) Distortion 1008kHz	1.6%
9) Frequency Response (-6dB)	100Hz~2000Hz

(3) SW

1) Frequency Range	5.8MHz~18.0MHz
2) Intermedite Frequency	450kHz
3) Usable Sensitivity	40dB
4) Selectivity	28dB
5) Signal-to-noise Ratio 11MHz	37dB

(4) LW

1) Frequency Range	153kHz~281kHz
2) Intermediate Frequency	450kHz
3) Usable Sensitivity	65dB
4) Image Rejection 254kHz	25dB
5) Signal-to-noise Ratio 200kHz	30dB
6) Distortion 200kHz	3%

3. TAPE DECK

1) Tape Speed (MTT-111)	4.75 cm/sec
2) Wow Flutter (MTT-111)	0.25%
3) Fast Forward & Rewind Time (C-60)	120sec
4) Frequency Response (Playback:5dB Range)	125Hz~10kHz
5) Signal-to-noise Ratio (Playback/Record)	48dB/43dB
6) Distortion (Playback/Record)	2% / 3.5%
7) Cross Talk (Playback/Record)	55dB/53dB
8) Channel Separation (Playback/Record)	50dB/43dB
9) Erase Ratio	55dB

4. CDP

1) Frequency Response (40Hz~20kHz)	±3.0dB
2) Signal-to-noise Ratio	70dB
3) Dynamic Range	73dB
4) T.H.D	0.4%
5) Separation	60dB

5. GENERAL

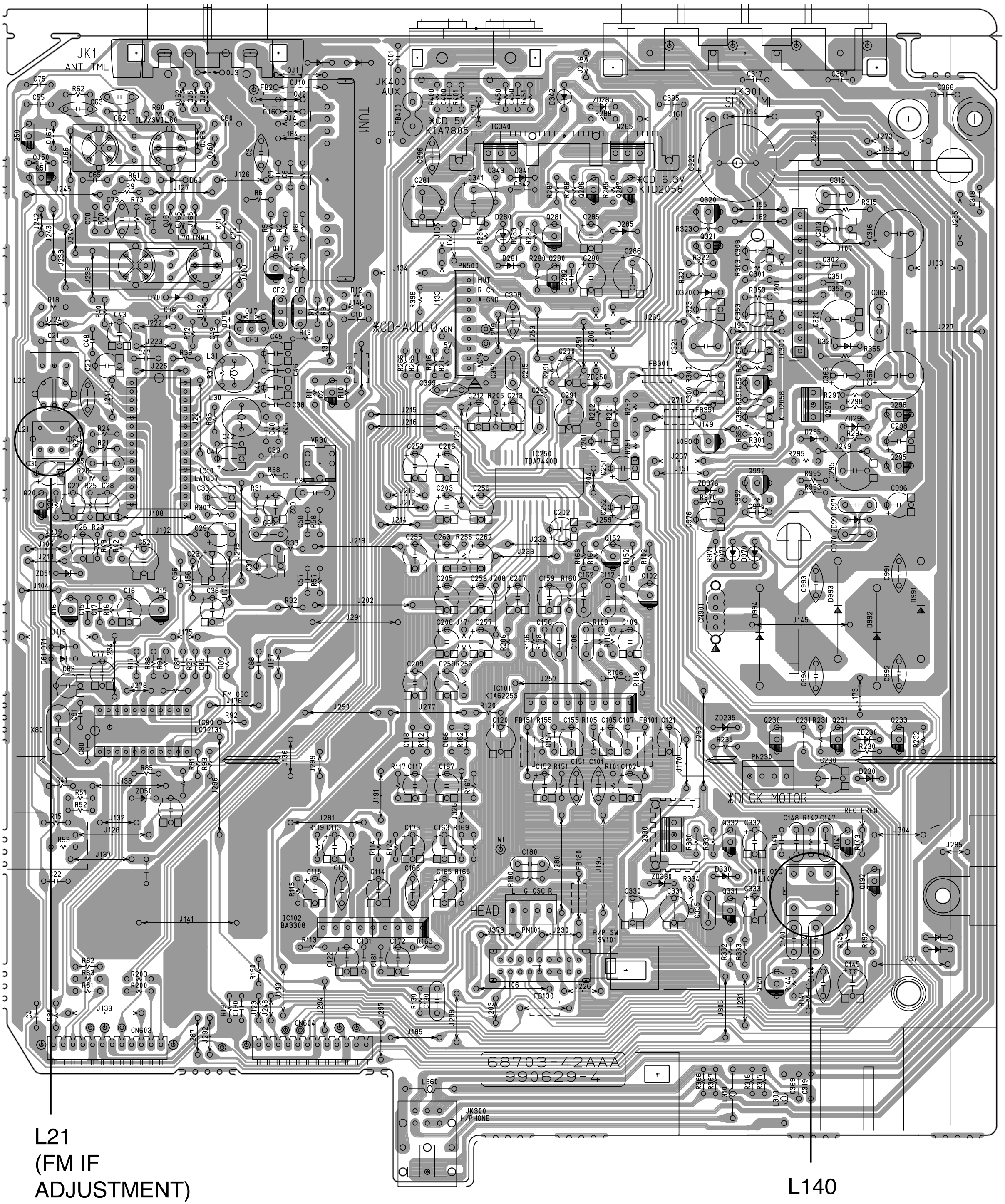
1) Power Requirement	Refer to the back panel of unit
2) Power Consumption	30W
3) Dimension (Net:W x H x D)	161 x 249 x 275(mm)
4) Weight (Net)	3.1kg

NOTE : Specification are subject to change without notice in the course of product improvement.

ADJUSTMENTS

This set has been aligned at the factory and normally will not require further adjustment. As a result, it is not recommended that any attempt is made to modificate any circuit. If any parts are replaced or if anyone tampers with the adjustment, realignment may be necessary.

ADJUSTMENT & TEST POINT


JK1
ANT TML
TUN1
JK400
AUX
*CD 5V
KIA7805
JK301
SPK TML
*CD 6.3V
KTD2058
PN500
MUT
R-Ch
A-GND
*CD-AUDIO
IC250
TDA7440D
IC10
LA1837
VR30
FM OSC
IC90
LC72131
X80
IC101
KIA6225S
*DECK MOTOR
REC FREQ
TAPE OSC
HEAD
IC102
BA3308
R/P SW
SW101
CN603
CN604
68703-42AAA
990629-4
JK300
H/PHONE

L21
(FM IF
ADJUSTMENT)

L140
(RECORD BIAS
ADJUSTMENT)

Figure 1. Main P.C. Board

TUNER ADJUSTMENT

Item	Test Point	Adjustment	Adjust for
DC Voltage	IC10 26, 28 pin	L21	0V±50mV

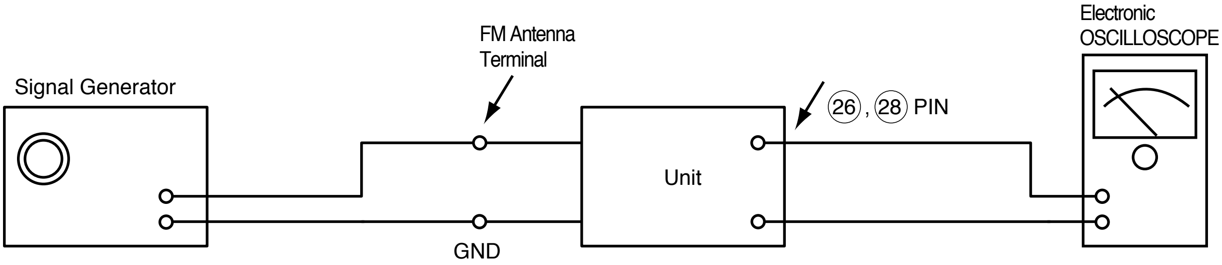

Signal Generator
FM Antenna Terminal
GND
Unit
㉖, ㉘ PIN
Electronic OSCILLOSCOPE

Figure 2. Tuner(S curve) Adjustment Connection Diagram

TAPE DECK ADJUSTMENT

1. AZIMUTH ADJUSTMENT

Deck Mode	Test Tape	Test Point	Adjustment	Adjust for	Remark
Playback	MTT-114	Speaker Terminal	Head Screw	R/L Maximum	Forward:Righthand Side Screw Reverse:Lefthand Side Screw

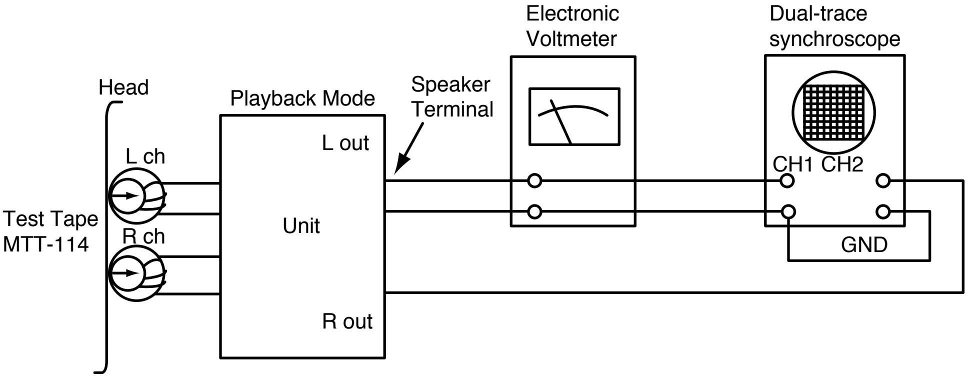

Head
L ch
R ch
Test Tape MTT-114
Playback Mode
L out
Unit
R out
Speaker Terminal
Electronic Voltmeter
Dual-trace synchroscope
CH1 CH2
GND

Figure 3. Azimuth Adjustment Connection Diagram

2. RECORD BIAS ADJUSTMENT

Deck Mode	Test Tape	Test Point	Adjustment	Adjust for
Rec/Pause	MTT-5511	Erase Head Wire	L140	83kHz±5kHz

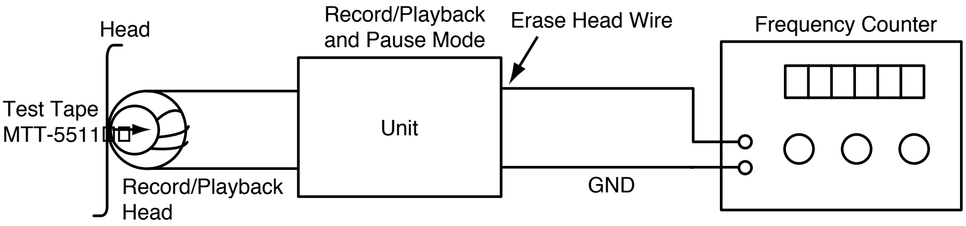

Head
Test Tape MTT-5511
Record/Playback Head
Record/Playback and Pause Mode
Unit
Erase Head Wire
GND
Frequency Counter

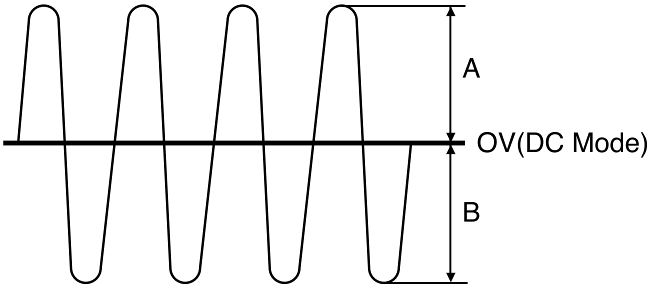
Figure 4. Record Bias Adjustment Connection Diagram

CDP ADJUSTMENTS

- When change the pick-up must be confirm as follow

1. TRACKING BALANCE CONFIRMATION

1) Connect the oscilloscope to TEO and REF.(IC501 pin 54 and 71)
2) Access from 1st selection to last section of test disc (YEDS-18)
3) Confirm the normal state of tracking error signal (T.B deviation : less than ±3%)

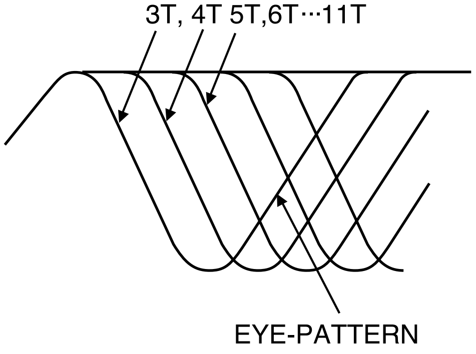


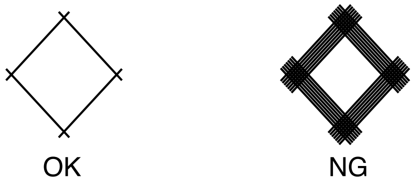
A=B

$$\text{T.B deviation(\%)} = \frac{A-B}{A+B} \times \frac{100}{2}\ \%$$

2. RF WAVEFORM CONFIRMATION

1) Connect the oscilloscope to RF and REF.(IC501 pin 74 and 71)
2) Put a test disc (SONY YEDS-18) into unit and playback the 18th selection of the test disc.
3) Confirm the normal state of RF waveform.
4) Confirm the less than 30nS of Jitter Meter reading.

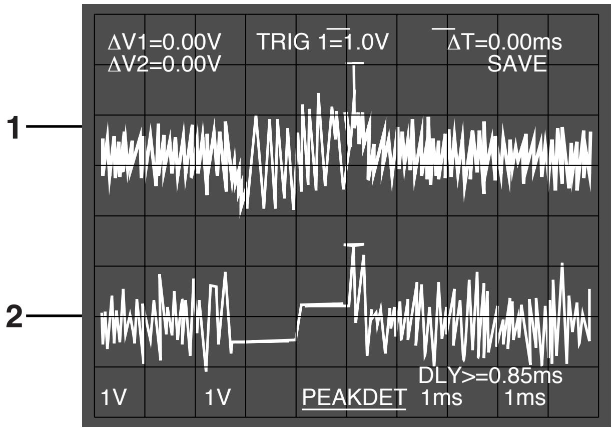




EYE-PATTERN

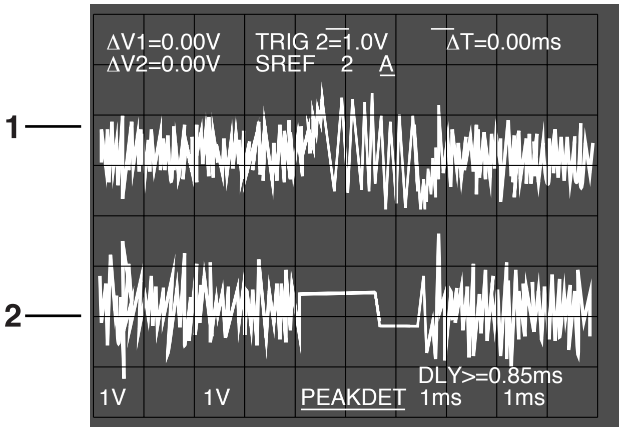
MAJOR WAVEFORM

TRACKING ERROR(REW)



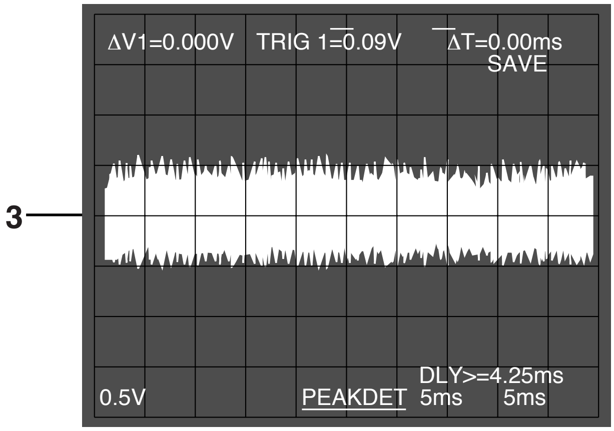
- **Connection** : 1. IC501 pin(54).(TEO)
  2. IC501 pin㊿
- **Inspection** : Check tracking servo circuit.(RWD)

TRACKING ERROR(FWD)



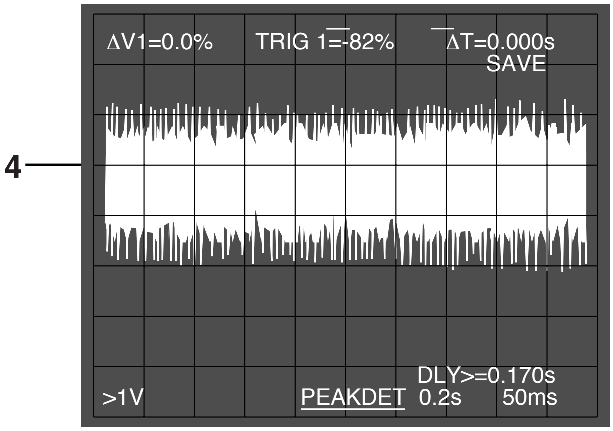
- **Connection** : 1. IC501 pin(54).(TEO)
  2. IC501 pin㊿
- **Inspection** : Check tracking servo circuit.(RWD)

FOCUS GAIN



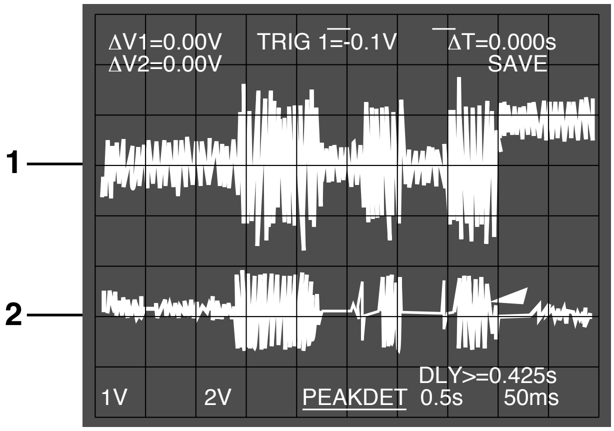
- **Connection** : 3. IC502 pin ① and ②.
  - Test disc : YEDS-43
- **Inspection** : Confirm focus servo circuit.

TRACKING GAIN



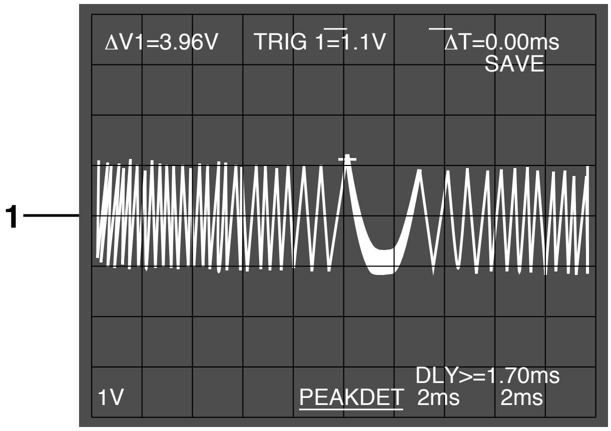
- **Connection** : 3. IC502 pin ㉖ and ㉗.
  - Test disc: YEDS-43
- **Inspection** : Confirm TRACK servo circuit.

TRACKING COIL DRIVE



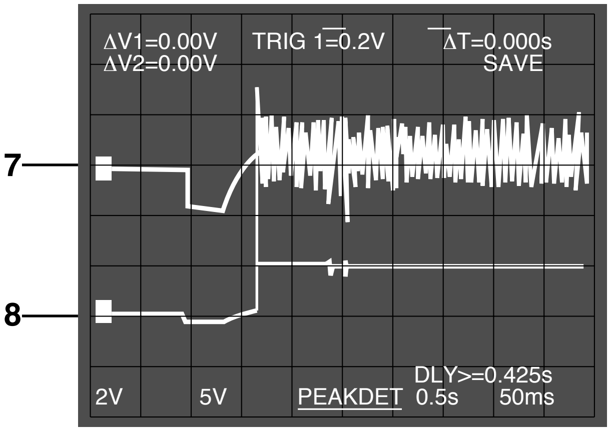
- **Connection** : 1. IC501 pin (54). (TEO)
  2. IC501 pin ㊿
- **Inspection** : - Confirm tracking servo circuit.
  - Check IC501 (Cold solder joint or short circuit)

E.F. BALANCE



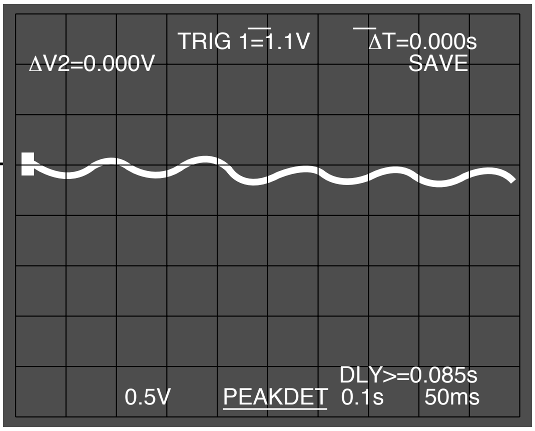
- **Connection** : 1. IC501 pin (54).
- **Inspection** : Confirm tacking servo balance deviation rate

READING



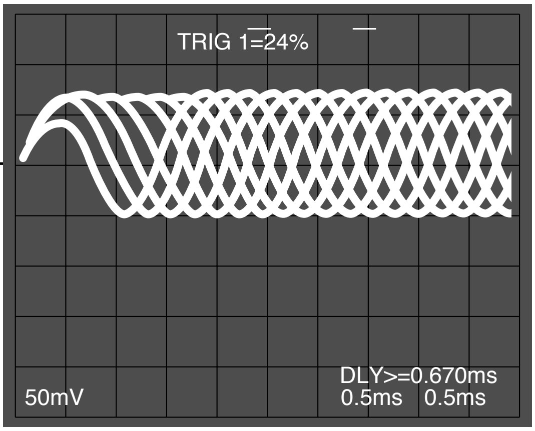
- **Connection** : 7. IC501 pin ㊽.
  8. IC501 pin ㊵ (FOK)
- **Inspection** : Check IC502 pin ④ to IC501 PIN ㊽ (Pattern defective)

9



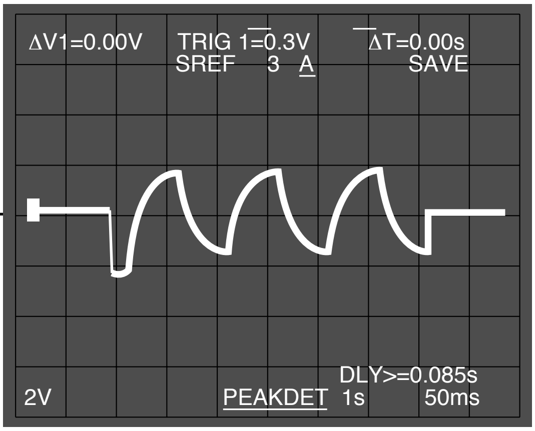
- **Connection** : 9. IC502 pin ⑰ and ⑱
- **Inspection** : - Check IC501 pin ㊸ to IC502 pin ⑳ (Pattern defective)
  - Check voltage. (IC502 pin ⑳)

10



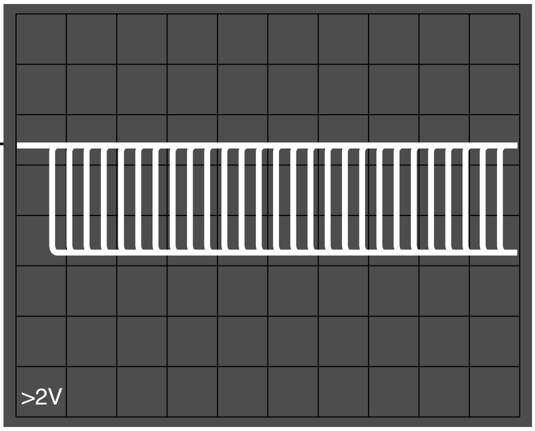
- **Connection** : 10. IC501 pin (74).
- **Inspection** : Check objective Lens of Pickup clear or not

11



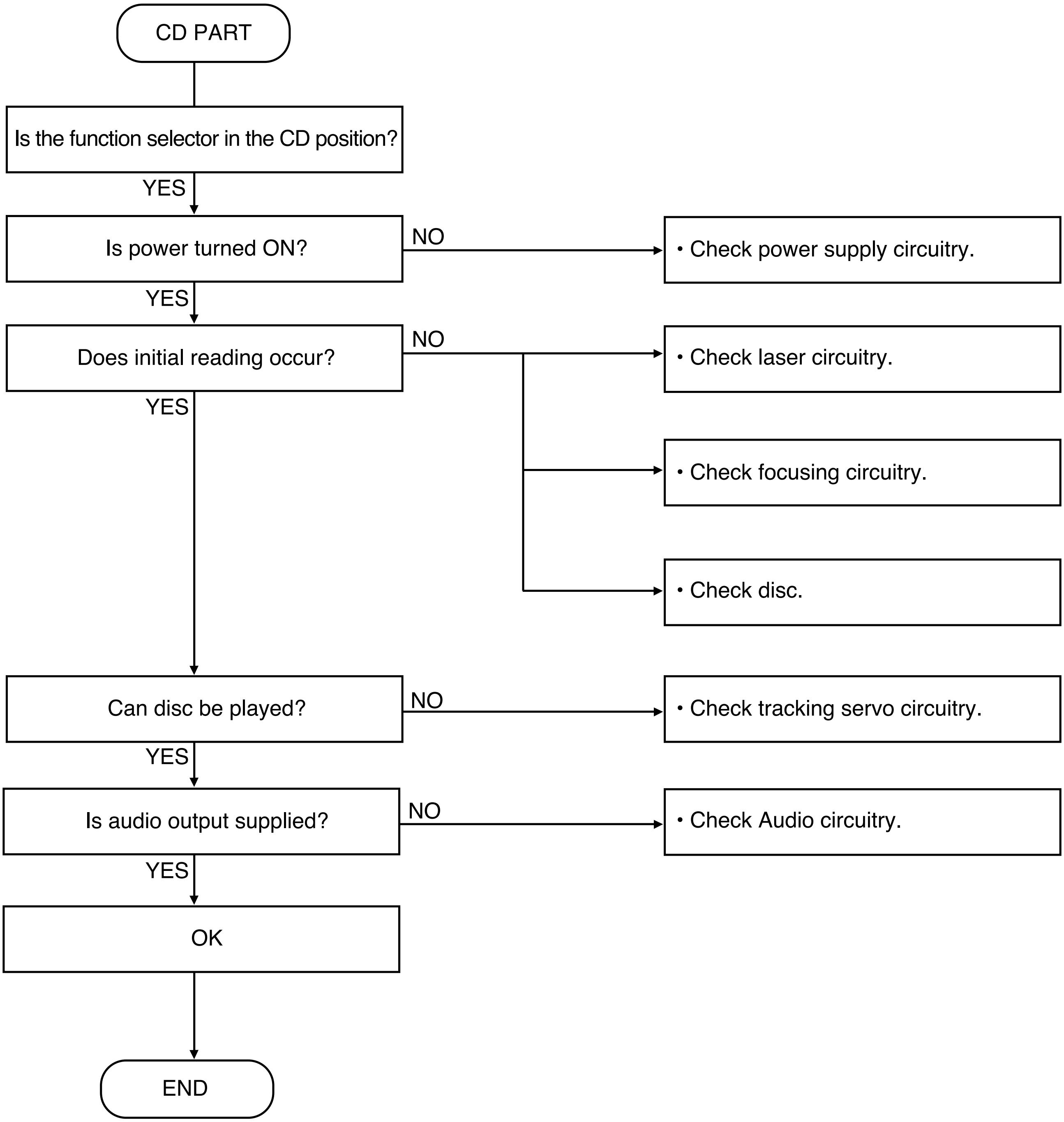
- **Connection** : 11. IC502 pin ① and ②.
- **Inspection** : - Is focus search signal output to IC501 pin ㊽ ?

12

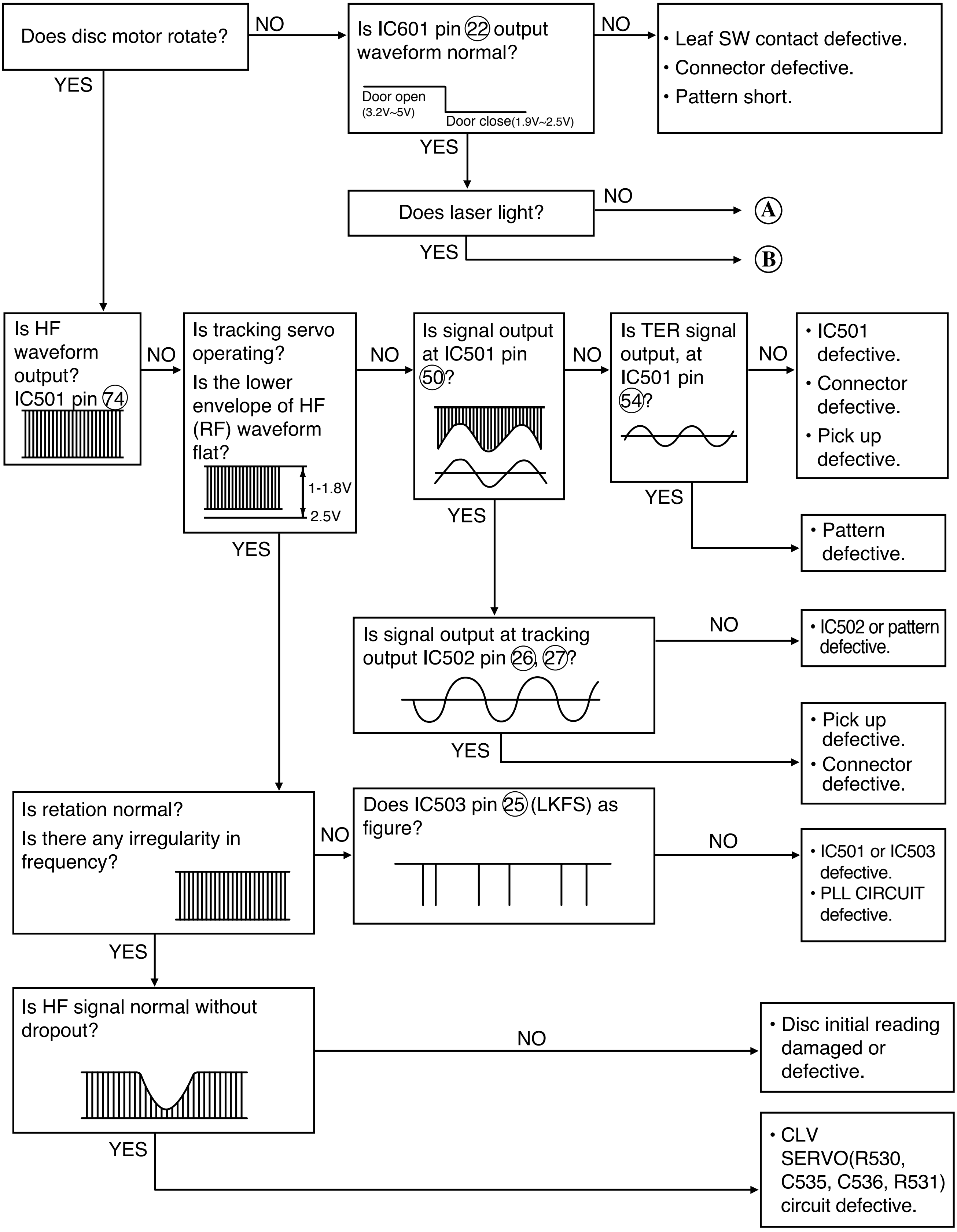


- **Connection** : 12. IC501 pin ㉝.
- **Inspection** : Check IC503 and surrounding circuit (Cold solder joint or short circuit)

TROUBLESHOOTING GUIDE

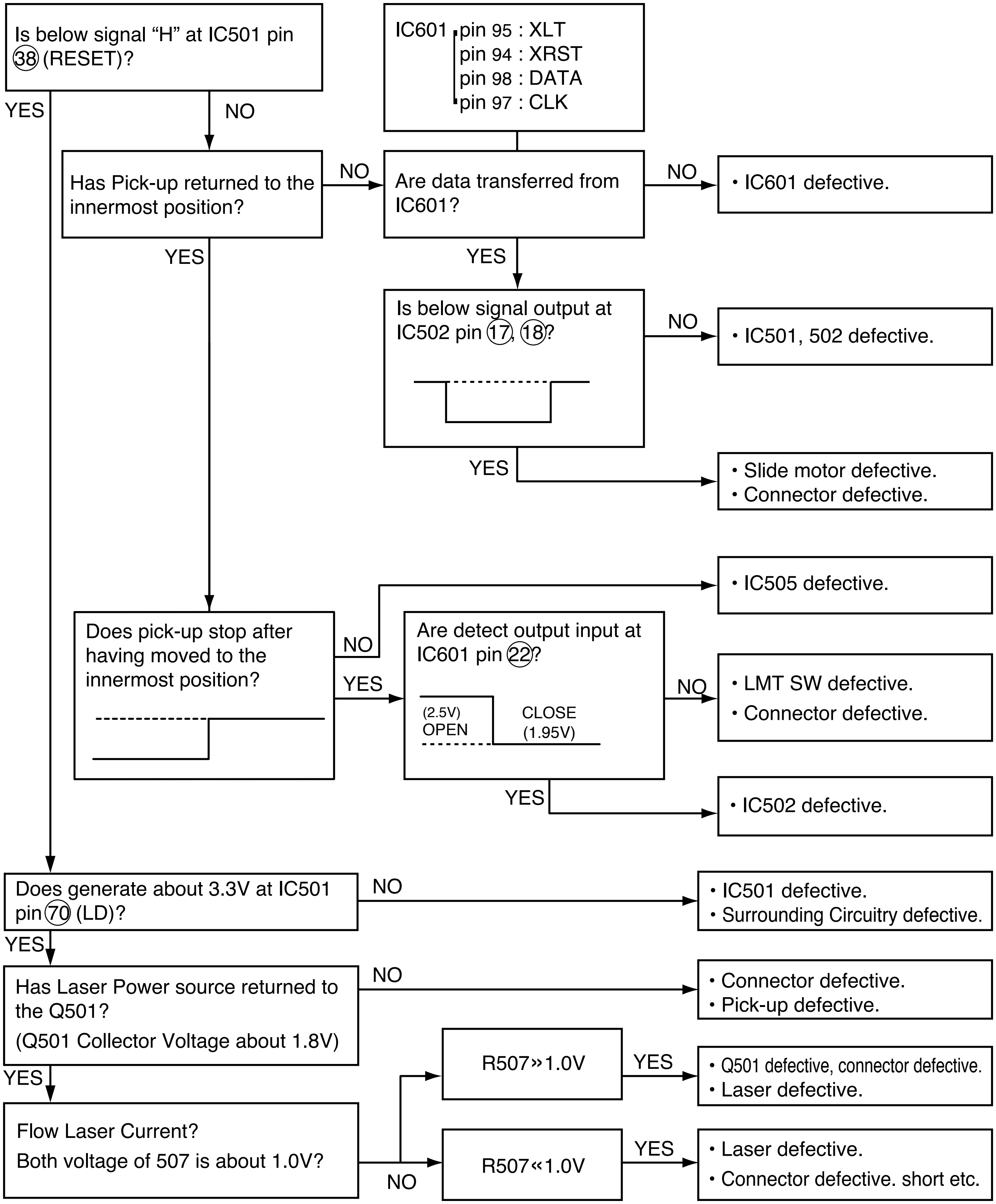

CD PART
Is the function selector in the CD position?
YES
Is power turned ON?
NO
• Check power supply circuitry.
YES
Does initial reading occur?
NO
• Check laser circuitry.
• Check focusing circuitry.
• Check disc.
YES
Can disc be played?
NO
• Check tracking servo circuitry.
YES
Is audio output supplied?
NO
• Check Audio circuitry.
YES
OK
END

1. If initial reading is not carried out (with disc)



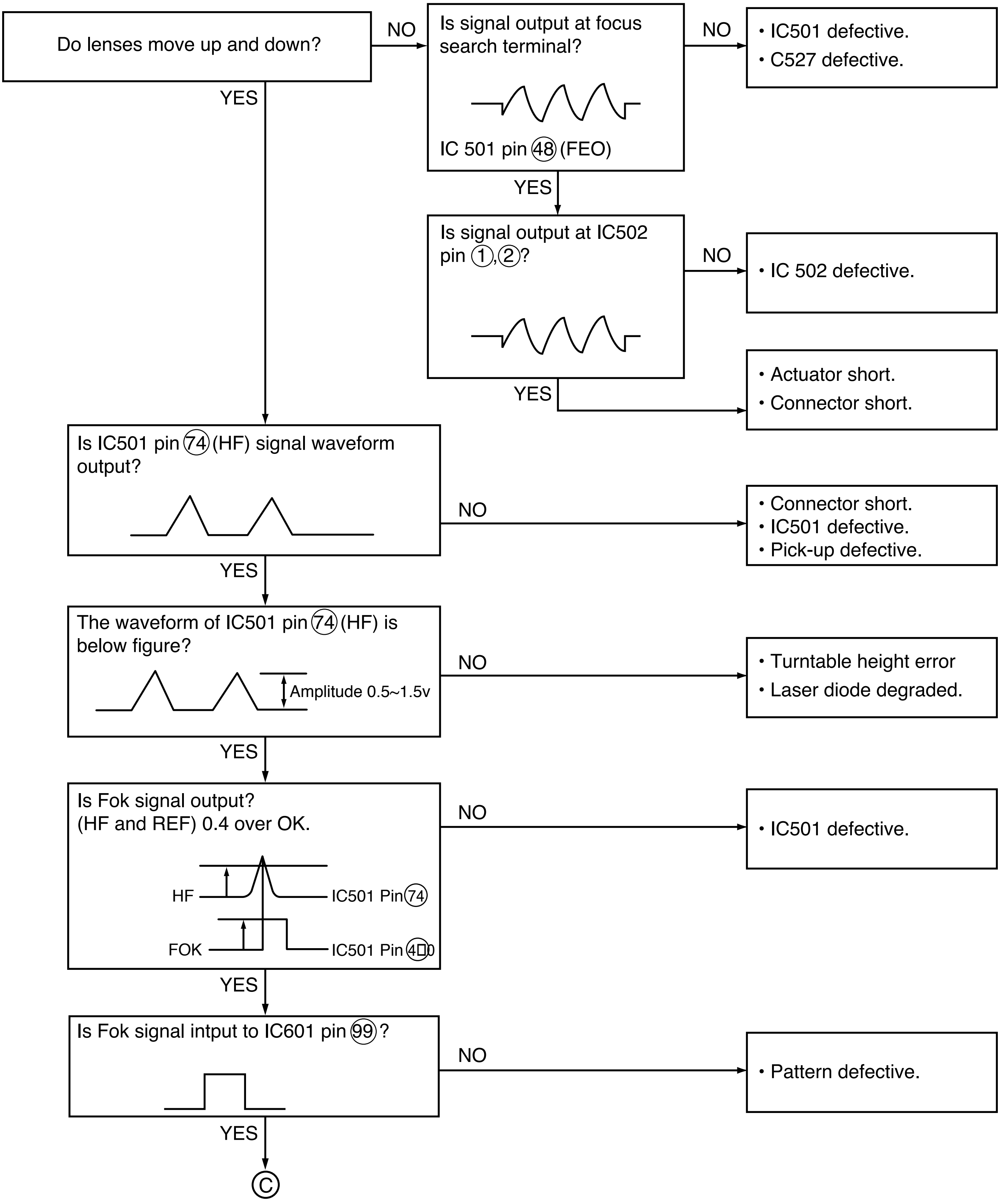
Does disc motor rotate?
NO
YES
Is IC601 pin ㉒ output waveform normal?
Door open (3.2V~5V)
Door close(1.9V~2.5V)
NO
• Leaf SW contact defective.
• Connector defective.
• Pattern short.
YES
Does laser light?
NO
Ⓐ
YES
Ⓑ
Is HF waveform output? IC501 pin (74)
NO
Is tracking servo operating? Is the lower envelope of HF (RF) waveform flat?
1-1.8V
2.5V
NO
Is signal output at IC501 pin (50)?
NO
Is TER signal output, at IC501 pin (54)?
NO
• IC501 defective.
• Connector defective.
• Pick up defective.
YES
• Pattern defective.
YES
YES
Is signal output at tracking output IC502 pin ㉖, ㉗?
NO
• IC502 or pattern defective.
YES
• Pick up defective.
• Connector defective.
Is retation normal? Is there any irregularity in frequency?
NO
Does IC503 pin ㉕ (LKFS) as figure?
NO
• IC501 or IC503 defective.
• PLL CIRCUIT defective.
YES
Is HF signal normal without dropout?
NO
• Disc initial reading damaged or defective.
YES
• CLV SERVO(R530, C535, C536, R531) circuit defective.

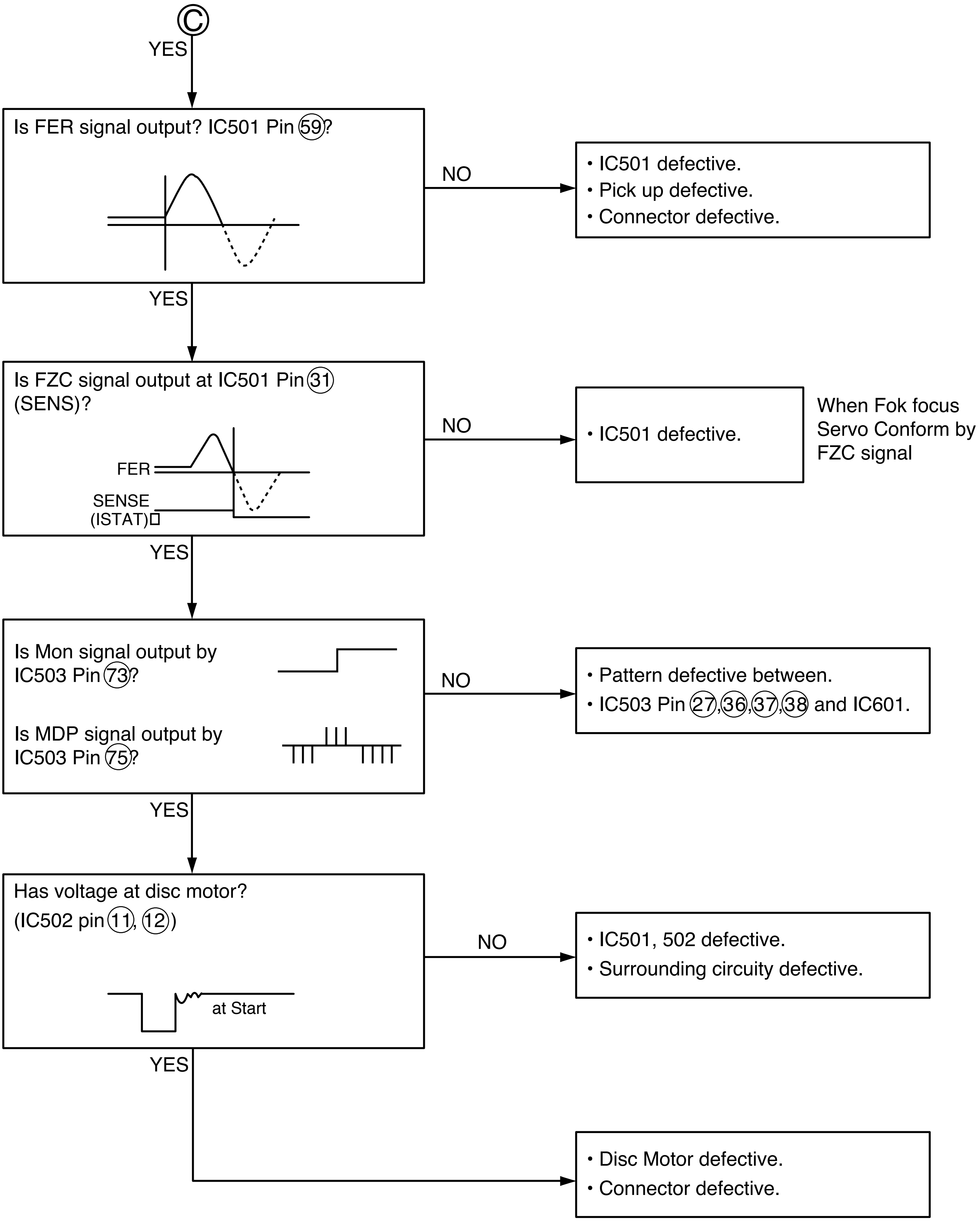
Ⓐ When laser does not light



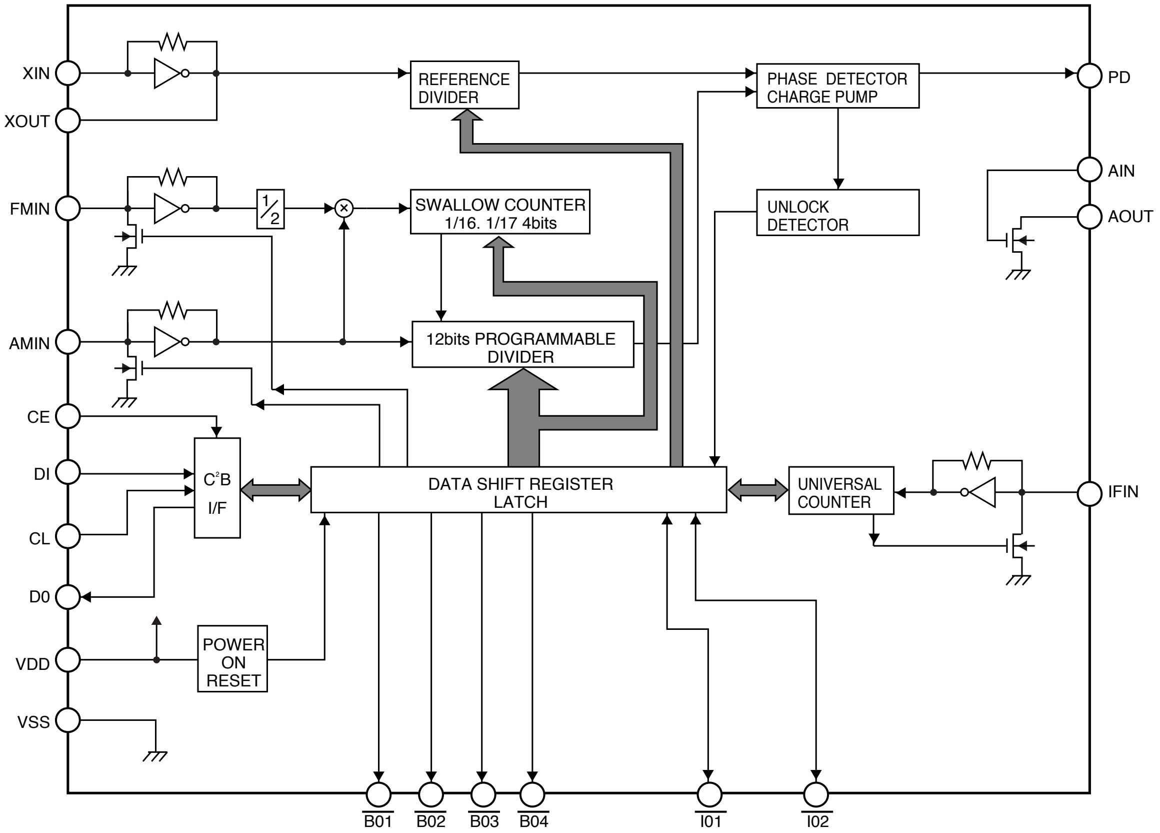
Is below signal "H" at IC501 pin ㊳ (RESET)?
YES
NO
IC601
pin 95 : XLT
pin 94 : XRST
pin 98 : DATA
pin 97 : CLK
Has Pick-up returned to the innermost position?
NO
Are data transferred from IC601?
NO
• IC601 defective.
YES
YES
Is below signal output at IC502 pin ⑰, ⑱?
NO
• IC501, 502 defective.
YES
• Slide motor defective.
• Connector defective.
• IC505 defective.
Does pick-up stop after having moved to the innermost position?
NO
YES
Are detect output input at IC601 pin ㉒?
(2.5V)
OPEN
CLOSE
(1.95V)
NO
• LMT SW defective.
• Connector defective.
YES
• IC502 defective.
Does generate about 3.3V at IC501 pin ⑳ (LD)?
NO
• IC501 defective.
• Surrounding Circuitry defective.
YES
Has Laser Power source returned to the Q501?
(Q501 Collector Voltage about 1.8V)
NO
• Connector defective.
• Pick-up defective.
YES
R507»1.0V
YES
• Q501 defective, connector defective.
• Laser defective.
Flow Laser Current?
Both voltage of 507 is about 1.0V?
NO
R507«1.0V
YES
• Laser defective.
• Connector defective. short etc.

Ⓑ When laser light

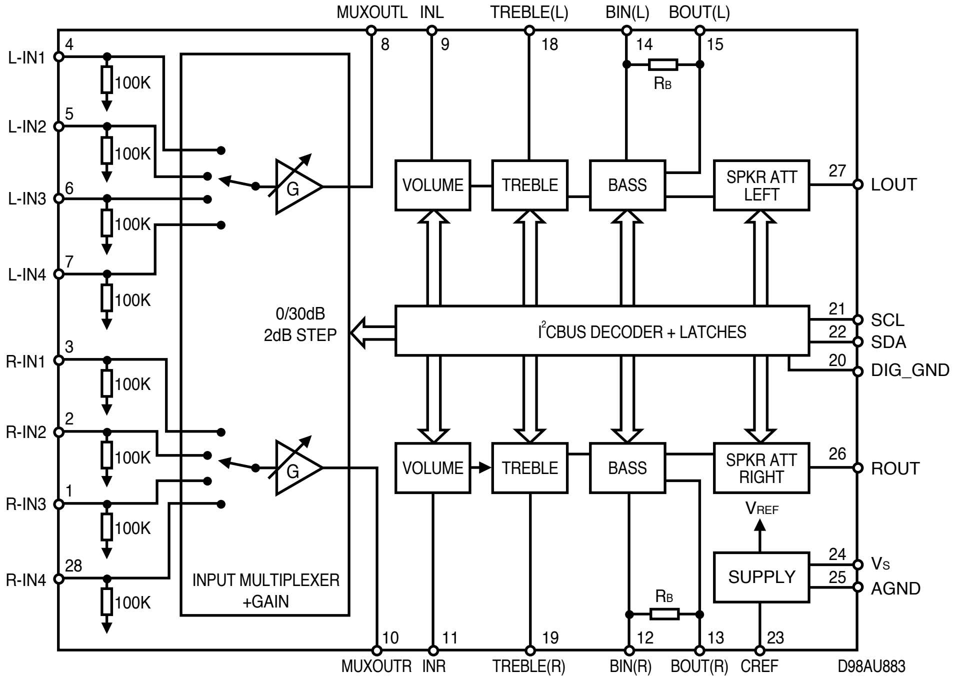

Do lenses move up and down?
NO
Is signal output at focus search terminal?
IC 501 pin ㊽ (FEO)
NO
• IC501 defective.
• C527 defective.
YES
Is signal output at IC502 pin ①,②?
NO
• IC 502 defective.
YES
• Actuator short.
• Connector short.
YES
Is IC501 pin (74) (HF) signal waveform output?
NO
• Connector short.
• IC501 defective.
• Pick-up defective.
YES
The waveform of IC501 pin (74) (HF) is below figure?
Amplitude 0.5~1.5v
NO
• Turntable height error
• Laser diode degraded.
YES
Is Fok signal output?
(HF and REF) 0.4 over OK.
HF
IC501 Pin (74)
FOK
IC501 Pin ㊵
NO
• IC501 defective.
YES
Is Fok signal intput to IC601 pin (99)?
NO
• Pattern defective.
YES
Ⓒ


Ⓒ
YES
Is FER signal output? IC501 Pin ㊾?
NO
• IC501 defective.
• Pick up defective.
• Connector defective.
YES
Is FZC signal output at IC501 Pin ㉛ (SENS)?
FER
SENSE (ISTAT)
NO
• IC501 defective.
When Fok focus Servo Conform by FZC signal
YES
Is Mon signal output by IC503 Pin (73)?
Is MDP signal output by IC503 Pin (75)?
NO
• Pattern defective between.
• IC503 Pin ㉗,㊱,㊲,㊳ and IC601.
YES
Has voltage at disc motor? (IC502 pin ⑪, ⑫)
at Start
NO
• IC501, 502 defective.
• Surrounding circuity defective.
YES
• Disc Motor defective.
• Connector defective.

■ LC72131, 72131M


XIN
XOUT
FMIN
AMIN
CE
DI
CL
D0
VDD
VSS
REFERENCE DIVIDER
PHASE DETECTOR CHARGE PUMP
PD
AIN
AOUT
UNLOCK DETECTOR
1/2
SWALLOW COUNTER 1/16. 1/17 4bits
12bits PROGRAMMABLE DIVIDER
C²B I/F
DATA SHIFT REGISTER LATCH
UNIVERSAL COUNTER
IFIN
POWER ON RESET
B01
B02
B03
B04
I01
I02

■ TDA7440D


MUXOUTL
INL
TREBLE(L)
BIN(L)
BOUT(L)
8
9
18
14
15
RB
L-IN1
4
100K
L-IN2
5
100K
L-IN3
6
100K
L-IN4
7
100K
R-IN1
3
100K
R-IN2
2
100K
R-IN3
1
100K
R-IN4
28
100K
G
G
0/30dB
2dB STEP
INPUT MULTIPLEXER +GAIN
VOLUME
TREBLE
BASS
SPKR ATT LEFT
27
LOUT
I²CBUS DECODER + LATCHES
21
SCL
22
SDA
20
DIG_GND
VOLUME
TREBLE
BASS
SPKR ATT RIGHT
26
ROUT
VREF
SUPPLY
24
VS
25
AGND
RB
10
11
19
12
13
23
MUXOUTR
INR
TREBLE(R)
BIN(R)
BOUT(R)
CREF
D98AU883

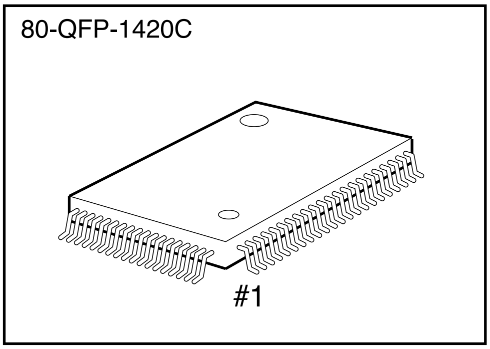
■ KB9223(IC501)

OVERVIEW

The KB9223 is a 1-chip BICMOS intergrated circuit to perform the function of RF AMP and Servo signal processor for compact disc player application. It consist of blocks for RF signal processing, focus, tracking, sled and spindle servo. Also this IC has adjustment free function and embeded opamp for audio post filter.

FEATURES

- RF amplifier & RF equalizer
- Focus error amplifier & servo control
- Tracking error amplifier & servo control
- Mirror & Defect detector circuit
- Focus OK detrector circuit
- APC(Auto Laser Power Control) circuit for constant laser power
- FE bias & focus servo offset adjustment free
- EF balance & tracking error gain adjustment free
- Embeded audio post filter
- The circuit for Interruption countermeasure
- Double speed play available
- Operating voitage range 3.4V~5.5V


80-QFP-1420C
#1

ORDERING INFORMATION

Device	Package	Tempe. Range
KB9223	80-QFP-1420C	-20~+70˚C

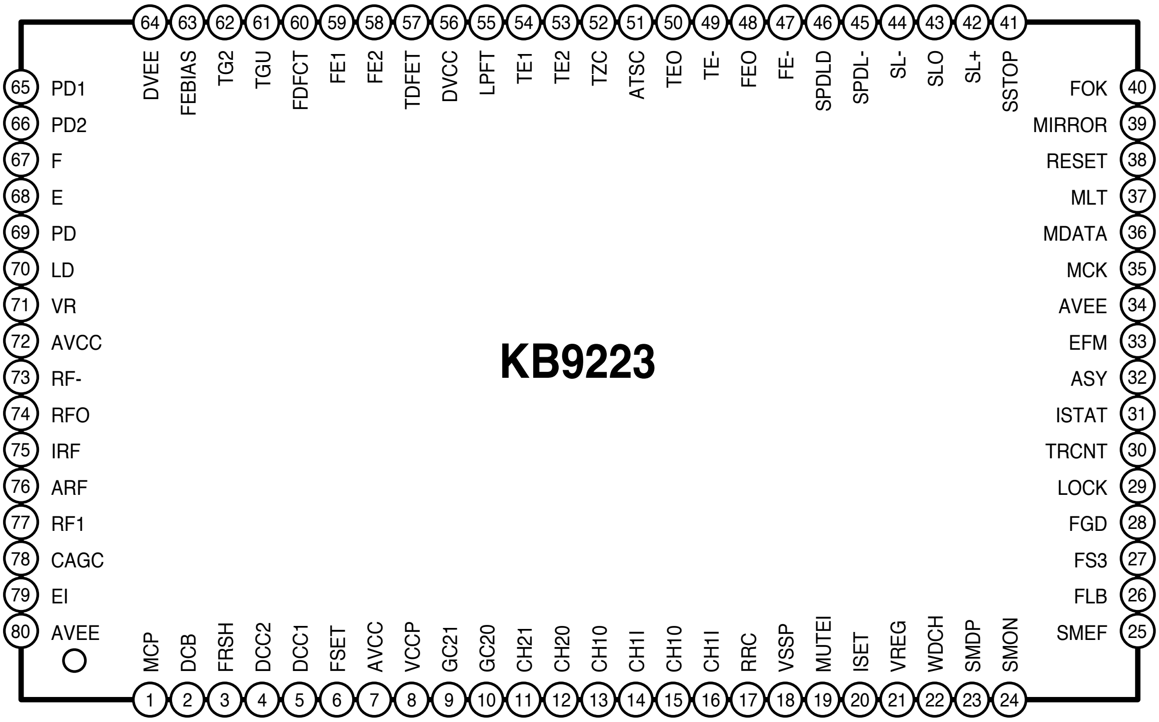
APPLICATIONS

- CD PLAYER
- Video-CD

RELATED PRODUCT

- KS9286 Data Processor
- KS9284 Data Processor
- KS9258D/KA9259D Motor Driver

PIN CONFIGURATION


KB9223
1 MCP
2 DCB
3 FRSH
4 DCC2
5 DCC1
6 FSET
7 AVCC
8 VCCP
9 GC21
10 GC20
11 CH21
12 CH20
13 CH10
14 CH1I
15 CH10
16 CH1I
17 RRC
18 VSSP
19 MUTEI
20 ISET
21 VREG
22 WDCH
23 SMDP
24 SMON
25 SMEF
26 FLB
27 FS3
28 FGD
29 LOCK
30 TRCNT
31 ISTAT
32 ASY
33 EFM
34 AVEE
35 MCK
36 MDATA
37 MLT
38 RESET
39 MIRROR
40 FOK
41 SSTOP
42 SL+
43 SLO
44 SL-
45 SPDL-
46 SPDLD
47 FE-
48 FEO
49 TE-
50 TEO
51 ATSC
52 TZC
53 TE2
54 TE1
55 LPFT
56 DVCC
57 TDFET
58 FE2
59 FE1
60 FDFCT
61 TGU
62 TG2
63 FEBIAS
64 DVEE
65 PD1
66 PD2
67 F
68 E
69 PD
70 LD
71 VR
72 AVCC
73 RF-
74 RFO
75 IRF
76 ARF
77 RF1
78 CAGC
79 EI
80 AVEE

PIN DESCRIPTION

Pin No.	Symbol	Description
1	MCP	Capacitor connection pin for mirror hold
2	DCB	Capacitor connection pin for defect Bottom hold
3	FRSH	Capacitor connection pin for time constant to generate focus search waveform
4	DCC2	The input pin through capacitor of defect bottom hold output
5	DCC1	The output pin of defect bottom hold
6	FSET	The peak frequency setting pin for focus, tracking servo and cut off frequency of CLV LPF
7	VDDA	Analog ACC for servo part
8	VCCP	VCC for post filter
9	GC2I	Amplifier negative input pin for gain and low pass filtering of DAC output CH2
10	GC2O	Amplifier output pin for gain and low pass filtering of DAC output CH2
11	CH2I	The input pin for post filter channel2
12	CH2O	The output pin for post filter channel2
13	CH1O	The output pin for post filter channel1
14	CH1I	The input pin for post filter channel1
15	GC1O	Amplifier output pin for gain and low pass filtering of DAC output CH1
16	GC1I	Amplifier negative input pin for gain and low pass filtering of DAC output CH1
17	RRC	The pin for noise reduction of post filter bias
18	VSSP	VSS for post filter
19	MUTEI	The input pin for post filter muting control
20	ISET	The input pin for current setting of focus search, track jump and sled okick voltage
21	VREG	The output pin of regulator
22	WDCK	The clock input pin for auto sequence
23	SMDP	The input pin of CLV control output pin SMDP of DSP
24	SMON	The input pin for spindle servo ON through SMON of DSP
25	SMEF	The input pin of provide for an external LPF time constant
26	FLB	Capacitor connection pin to perform rising low bandwidth of focus loop
27	FS3	The pin for high freqency gain change of focus loop with internal FS3 switch
28	FGD	Reducing high freqency gain with capacitor between FS3 pin
29	LOCK	Sled runaway prevention pin
30	TRCNT	Track count output pin
31	ISTAT	Internal status output pin
32	ASY	The input pin for asymmetry control
33	EFM	EFM comparator output pin
34	VSSA	Analog VSS for servo part
35	MCK	Micom clock input pin

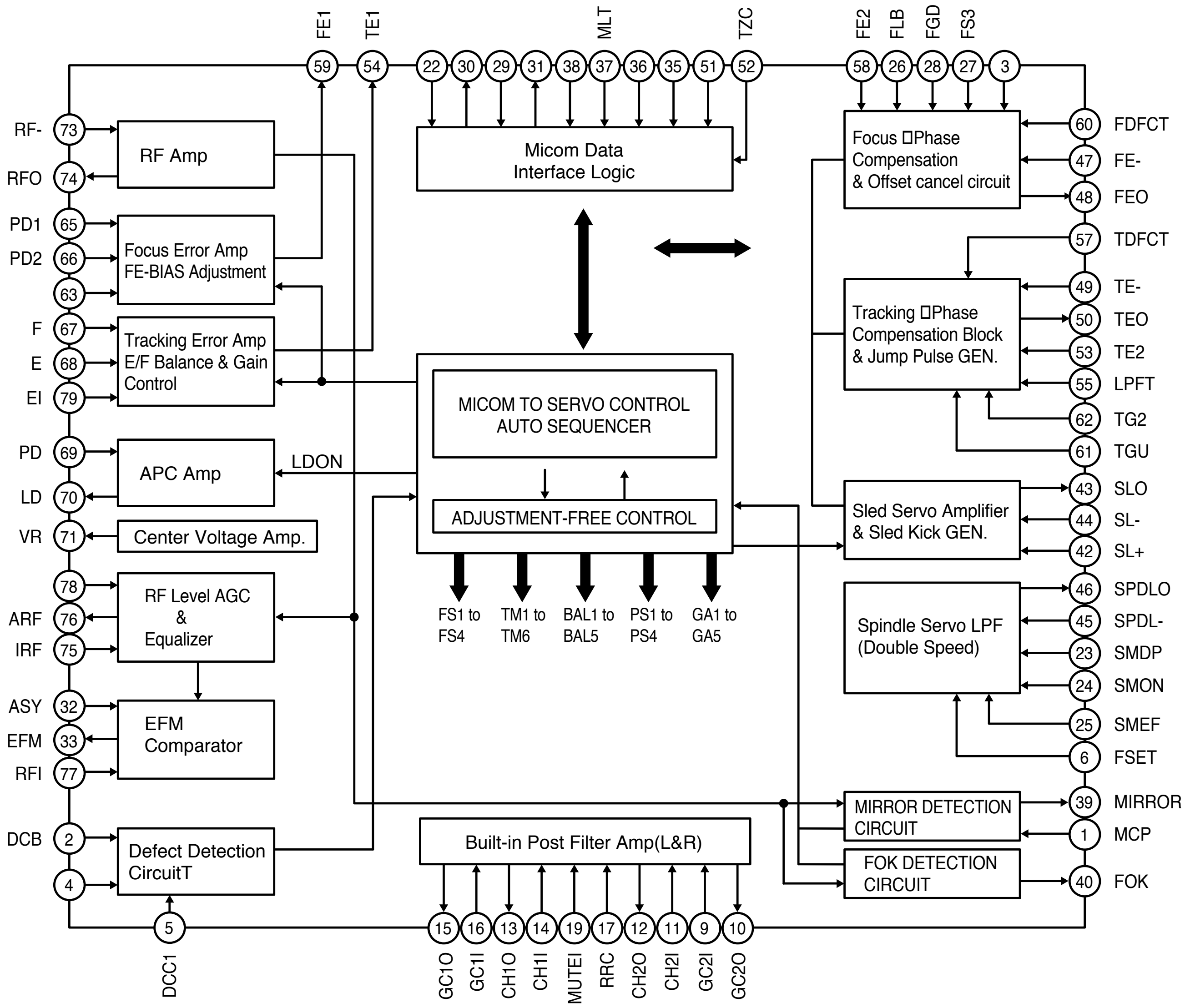
PIN DESCRIPTION (Continued)

Pin No.	Symbol	Description
36	MDATA	Micom data input pin
37	MLT	Micom data latch input pin
38	RESET	Reset input pin
39	MIRROR	The mirror output for test
40	FOK	The output pin of focus OK comparator
41	SSTOP	The pin for detection whether pick_up position is innermost or ton
42	SL+	The noninverting input pin of sled servo amplifier
43	SLO	The output pin of sled servo amplifier
44	SL-	The inverting input pin of sled servo amplifier
45	SPDL-	The noninverting input pin of spindle servo amplifier
46	SPDLO	The output pin of spindle servo amplifier
47	FE-	The inverting input pin of focus servo amplifier
48	FEO	The output pin of focus servo amplifier
49	TE-	The inverting input pin of tracking servo amplifier
50	TEO	The output pin of tracking servo amplifier
51	ATSC	The input pin for Anti-shock detection
52	TZC	The comaparator input pin for tracking zero crossing detection
53	TE2	Tracking servo input pin
54	TE1	Tracking error amplifier output pin
55	LPFT	The input pin of tracking error low pass filtering signal
56	DVDD	The power supply pin for logic circuit
57	TDFCT	The capacitor connection pin for tracking defect compensation
58	FE2	Focus servo input pin
59	FE1	Focus error amplifier output pin
60	FDFCT	The capacitor connection pin for focus defect compensation
61	TGU	The capacitor connection pin for high frequency tracking gain switch
62	TG2	The pin for high frequency gain change of tracking servo loop with internal TG2 switch
63	FEBIAS	Focus error bias voltage control pin
64	DVEE	The DVEE pin for logic circuit
65	PD1	The negative input pin of RF I/V amplifier1 (A+C signal)
66	PD2	The negative input pin of RF I/V amplifier2 (B+D signal)
67	F	The negative input pin of F I/V amplifier1 (F signal
68	E	The negative input pin of E I/V amplifier1 (E signal)
69	PD	The input pin for APC
70	LD	The output pin for APC

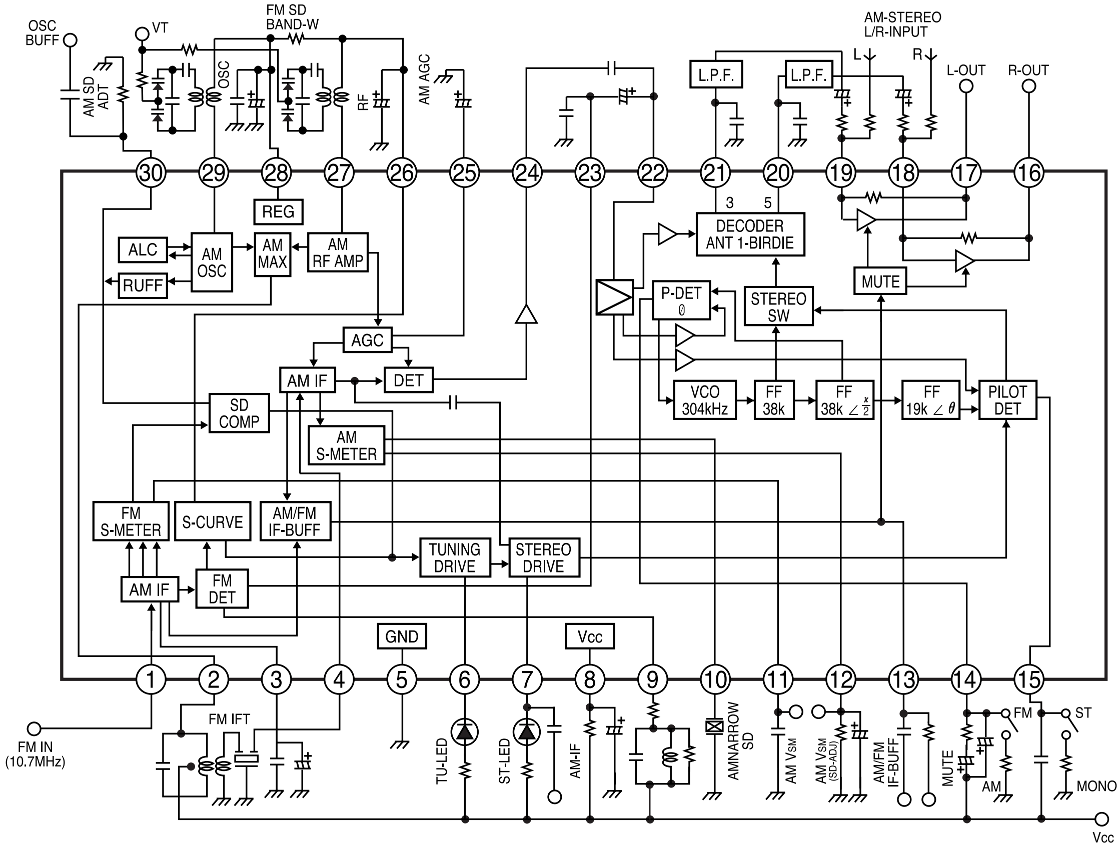
PIN DESCRIPTION (Continued)

Pin No.	Symbol	Description
71	VR	The output pin of (AVEE+AVCC)/2 voltage
72	VCC	VCC for RF part
73	RF-	RF summing amplifier inverting input pin
74	RFO	RF summing amplifier output pin
75	IRF	The input pin for AGC
76	ARF	The output pin for AGC
77	RFI	The input pin for EFM comparating
78	CAGC	The capacitor connection pin for AGC
79	EI	Feedback input pin of E I/V amplifier for EF Balance control
80	GND	GND for part

BLOCK DIAGRAM


FE1
TE1
MLT
TZC
FE2
FLB
FGD
FS3
59
54
22
30
29
31
38
37
36
35
51
52
58
26
28
27
3
RF-
73
RF Amp
RFO
74
Micom Data
Interface Logic
Focus □Phase
Compensation
& Offset cancel circuit
60
FDFCT
47
FE-
48
FEO
PD1
65
PD2
66
63
Focus Error Amp
FE-BIAS Adjustment
57
TDFCT
F
67
E
68
EI
79
Tracking Error Amp
E/F Balance & Gain
Control
Tracking □Phase
Compensation Block
& Jump Pulse GEN.
49
TE-
50
TEO
53
TE2
55
LPFT
62
TG2
61
TGU
MICOM TO SERVO CONTROL
AUTO SEQUENCER
PD
69
APC Amp
LDON
LD
70
ADJUSTMENT-FREE CONTROL
Sled Servo Amplifier
& Sled Kick GEN.
43
SLO
44
SL-
42
SL+
VR
71
Center Voltage Amp.
78
ARF
76
IRF
75
RF Level AGC
&
Equalizer
FS1 to
FS4
TM1 to
TM6
BAL1 to
BAL5
PS1 to
PS4
GA1 to
GA5
Spindle Servo LPF
(Double Speed)
46
SPDLO
45
SPDL-
23
SMDP
24
SMON
25
SMEF
6
FSET
ASY
32
EFM
33
RFI
77
EFM
Comparator
MIRROR DETECTION
CIRCUIT
39
MIRROR
1
MCP
DCB
2
4
Defect Detection
CircuitT
Built-in Post Filter Amp(L&R)
FOK DETECTION
CIRCUIT
40
FOK
5
15
16
13
14
19
17
12
11
9
10
DCC1
GC1O
GC1I
CH1O
CH1I
MUTEI
RRC
CH2O
CH2I
GC2I
GC2O

■ LA1837

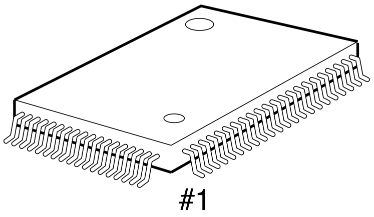

OSC BUFF
VT
FM SD BAND-W
AM SD ADT
OSC
RF
AM AGC
AM-STEREO L/R-INPUT
L
R
L-OUT
R-OUT
L.P.F.
L.P.F.
30
29
28
27
26
25
24
23
22
21
20
19
18
17
16
REG
ALC
AM OSC
AM MAX
AM RF AMP
RUFF
3
5
DECODER ANT 1-BIRDIE
MUTE
P-DET 0
STEREO SW
AGC
AM IF
DET
VCO 304kHz
FF 38k
FF 38k ∠ x/2
FF 19k ∠ θ
PILOT DET
SD COMP
AM S-METER
FM S-METER
S-CURVE
AM/FM IF-BUFF
TUNING DRIVE
STEREO DRIVE
AM IF
FM DET
GND
Vcc
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
FM IN (10.7MHz)
FM IFT
TU-LED
ST-LED
AM-IF
AMNARROW SD
AM VSM
AM VSM (SD-ADJ)
AM/FM IF-BUFF
MUTE
AM
FM
ST
MONO
Vcc

■ KB9286

DIGITAL SIGNAL PROCESSOR

The KS9286 is a CMOS integrated circuit designed for the Digital Audio Signal Processor for Compact Disc Player. It is a monolithic IC that builts-in 16 bit Digital Analog Convertor, ESP interface and Digital De-emphasis additional conventional DSP function.

80-QFP-1420C



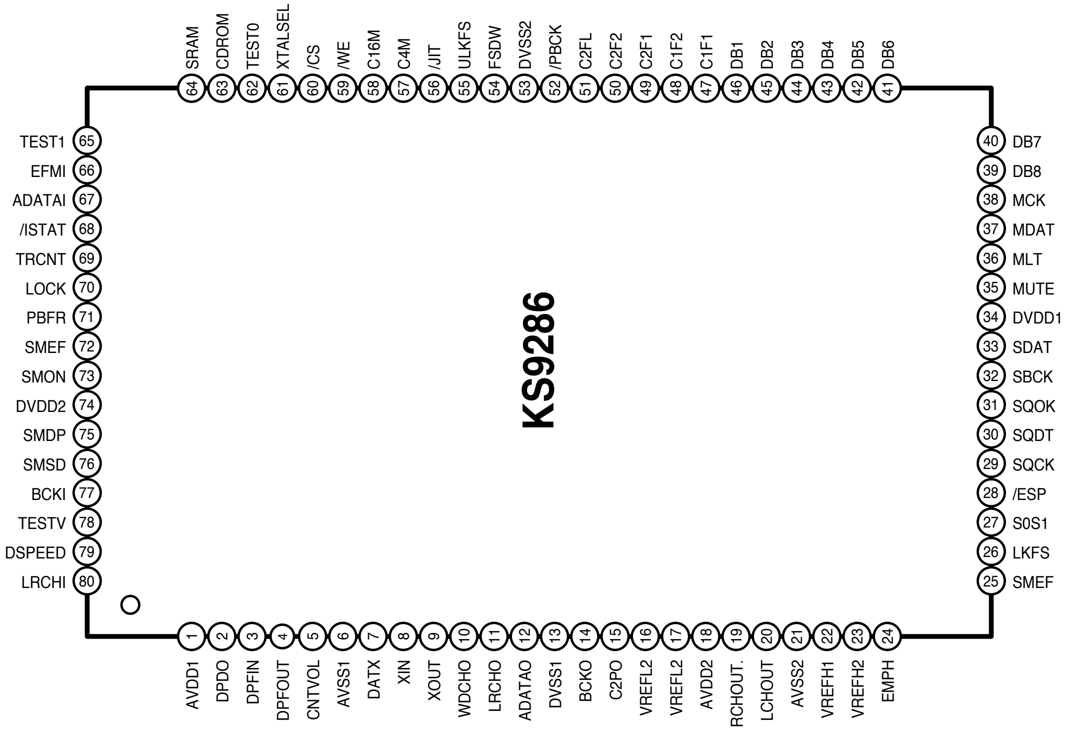
FEATURES

- EFM data demodulation
- Frame sync datection/protection/insertion
- Powerful error correction (C1 : 2error, C2 : 4erasure)
- Interpolation
- 8fs digital filter (51th+13th+9th)
- Subcode data serial output
- CLV servo controller
- Micom interface
- Digital audio output
- Digital de-emphasis
- ESP interface
- Built-in 16K SRAM
- Built-in Digital PLL
- Double speed play available
- Built-in 16 bit D/A converter
- VDD = 3.4 ~ 5.5V

ORDERING INFORMATION

Device	Package	Tempe. Range
KB9286	80-QFP-1420C	-20~+75˚C

PIN CONFIGURATION


64 SRAM
63 CDROM
62 TEST0
61 XTALSEL
60 /CS
59 /WE
58 C16M
57 C4M
56 /JIT
55 ULKFS
54 FSDW
53 DVSS2
52 /PBCK
51 C2FL
50 C2F2
49 C2F1
48 C1F2
47 C1F1
46 DB1
45 DB2
44 DB3
43 DB4
42 DB5
41 DB6
TEST1 65
EFMI 66
ADATAI 67
/ISTAT 68
TRCNT 69
LOCK 70
PBFR 71
SMEF 72
SMON 73
DVDD2 74
SMDP 75
SMSD 76
BCKI 77
TESTV 78
DSPEED 79
LRCHI 80
KS9286
40 DB7
39 DB8
38 MCK
37 MDAT
36 MLT
35 MUTE
34 DVDD1
33 SDAT
32 SBCK
31 SQOK
30 SQDT
29 SQCK
28 /ESP
27 S0S1
26 LKFS
25 SMEF
1 AVDD1
2 DPDO
3 DPFIN
4 DPFOUT
5 CNTVOL
6 AVSS1
7 DATX
8 XIN
9 XOUT
10 WDCHO
11 LRCHO
12 ADATAO
13 DVSS1
14 BCKO
15 C2PO
16 VREFL2
17 VREFL2
18 AVDD2
19 RCHOUT.
20 LCHOUT
21 AVSS2
22 VREFH1
23 VREFH2
24 EMPH

PIN DESCRIPTION

PIN NO	SYMBOL	IO	DESCRIPTION
1	AVDD1	-	Analog VCC1
2	DPDO	O	Charge pump output for Digital PLL
3	DPFIN	I	Filter input for Digital PLL
4	DPFOUT	O	Filter output for Digital PLL
5	CNTVOL	I	VCO control voltage for Digital PLL
6	AVSS1	-	Analog Ground1
7	DATX	O	Digital Audio output data
8	XIN	I	X’tal oscillator input
9	XOUT	O	X’tal oscillator output
10	WDCHO	O	Word clock output of 48 bit/Slot (88.2KHz)
11	LRCHO	O	Channel clock output of 48 bit/Slot (44.1KHz), 88.2KHz when ESP ON
12	ADATAO	O	Serial audio data output of 48 bit/Slot(MSB first), double speed output when ESP ON
13	DVSS1	-	Digital Ground1
14	BCKO	O	Audio data bit clock output of 48 bit/Slot (2.1168MHz), 4.2336MHz when ESP ON
15	C2PO	O	C2 Pointer for output audio data
16	VREFL2	I	Input terminal2 of reference voltage “L” (Floating)
17	VREFL1	I	Input terminal1 of reference voltage “L” (GND connection)
18	AVDD2	-	Analog VCC2
19	RCHOUT	O	Right-Channel audio output through D/A converter
20	LCHOUT	O	Left-Channel audio output through D/A converter
21	AVSS2	-	Analog ground2
22	VREFH1	I	Input terminal1 of reference voltage “H” (VDD connection)
23	VREFH2	I	Input terminal2 of reference voltage “H” (Floating)
24	EMPH	O	Emphasis/Non-Emphasis output, H:Emphasis ON, L:Emphasis OFF
25	LKFS	O	The Lock Status output of frame sync
26	S0S1	O	Output of subcode sync signal (S0+S1)
27	RESET	I	System reset at “L”
28	/ESP	I	ESP function ON/OFF control (“L”:ESP function ON, “H”:ESP function OFF)
29	SQCK	I	Clock for output Subcode-Q data
30	SQDT	O	Serial output of Subcode-Q data
31	SQOK	O	The CRC (Cycle Redundancy Check) check result signal output of Subcode-Q
32	SBCK	I	Clock for output subcode data
33	SDAT	O	Subcode serial data output
34	DVDD1	-	Digital VDD1
35	MUTE	I	Mute control input (“H”: Mute ON)

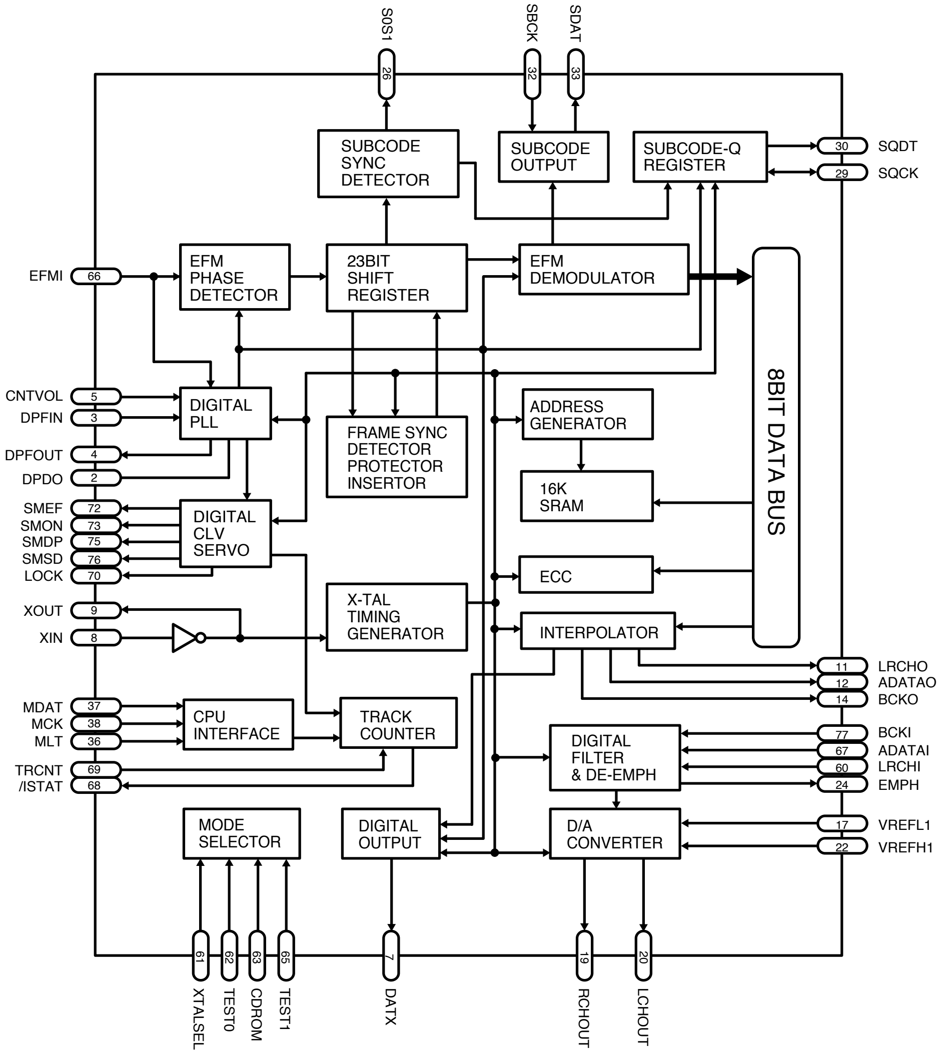
PIN DESCRIPTION (continued)

PIN NO	SYMBOL	IO	DESCRIPTION
36	MLT	I	Latch Signal Input from Micom (Schmit Trigger)
37	MDAT	I	Serial data input from Micom (Schmit Trigger)
38	MCK	I	Serial clock input from Micom (Schmit Trigger)
39	DB8	I/O	SRAM data I/O port 8 (MSB)
40	DB7	I/O	SRAM data I/O port 7
41	DB6	I/O	SRAM data I/O port 6
42	DB5	I/O	SRAM data I/O port 5
43	DB4	I/O	SRAM data I/O port 4
44	DB3	I/O	SRAM data I/O port 3
45	DB2	I/O	SRAM data I/O port 2
46	DB1	I/O	SRAM data I/O port 1 (LSB)
47	C1F1	I/O	Monitoring output for C1 error correction (RA1)
48	C1F2	I/O	Monitoring output for C1 error correction (RA2)
49	C2F1	I/O	Monitoring output for C2 error correction (RA3)
50	C2F2	I/O	Monitoring output for C2 error correction (RA4)
51	C2FL1	I/O	C2 decoder flag (RA5, “H”:When the processing C2 code is impossible correction status.)
52	/PBCK	I/O	Output of VCO/2 (4.3218MHz) (RA6)
53	DVSS2	I/O	Digital ground 2
54	FSDW	I/O	Window or unprotected frame sync (RA7)
55	ULKFS	I/O	Frame sync protection state (RA8)
56	/JIT	I/O	Display of either RAM overflow or underflow for ±4 frame jitter margin (RA9)
57	C4M	I/O	Only monitoring signal (4.2336MHz) (RA10)
58	C16M	I/O	16.9344MHz signal output (RA11)
59	/WE	I/O	Terminal for test
60	/CS	I/O	Terminal for test
61	XTALSEL	I	Mode Selection 1 (H: 33.8688MHz, L: 16.9344MHz)
62	TEST0	I	TEST input terminal (GND connection)
63	CDROM	I	Mode Selection2 (H: CDROM, L: CDP)
64	SRAM	I	TEST input terminal (GND connection)
65	TEST1	I	TEST input terminal (GND connection)
66	EFMI	I	EFM signal input
67	ADATAI	I	Serial audio data input of 48 bit/Slot (MSB first)
68	/ISTAT	O	The internal status output
69	TRCNT	I	Tracking counter input signal

PIN DESCRIPTION (continued)

PIN NO	SYMBOL	IO	DESCRIPTION
70	LOCK	O	Output signal of LKFS condition sampled PBFR/16 (if LKFS is “H”, LOCK is “H”, if LKFS is sampled “L” at least 8 times by PBFR/16, LOCK is “L”.)
71	PBFR	O	Write frame clock (Lock: 7.35KHz)
72	SMEF	O	LPF time constant control of the spindle servo error signal
73	SMON	O	ON/OFF control signal for spindle servo
74	DVDD2	-	Digital VDD2
75	SMDP	O	Spindle Motor drive (Rough control in the SPEED mode, Phase control in the PHASE mode)
76	SMSD	O	Spindle Motor drive (Velocity control in the PHASE mode)
77	BCKI	I	Audio data bit clock input of 48 bit/Slot (2.1168MHz)
78	TESTV	I	TEST input terminal (GND connection)
79	DSPEED	I	TEST input terminal (VDD connection)
80	LRCHI	I	Channel clock input of 48 bit/Slot (44.1KHz)

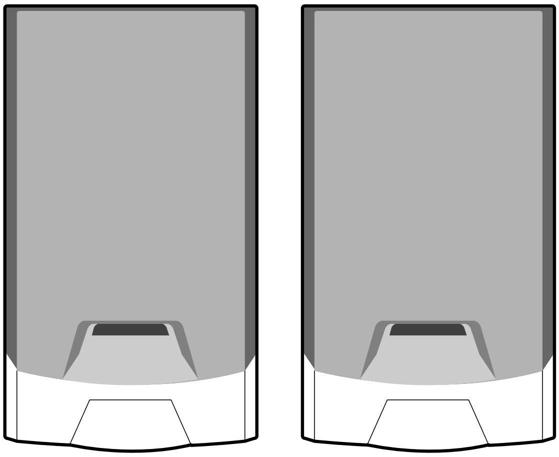
BLOCK DIAGRAM



S0S1
26
SBCK
32
SDAT
33
SUBCODE SYNC DETECTOR
SUBCODE OUTPUT
SUBCODE-Q REGISTER
30
SQDT
29
SQCK
EFMI
66
EFM PHASE DETECTOR
23BIT SHIFT REGISTER
EFM DEMODULATOR
8BIT DATA BUS
CNTVOL
5
DPFIN
3
DIGITAL PLL
DPFOUT
4
DPDO
2
FRAME SYNC DETECTOR PROTECTOR INSERTOR
ADDRESS GENERATOR
16K SRAM
SMEF
72
SMON
73
SMDP
75
SMSD
76
LOCK
70
DIGITAL CLV SERVO
ECC
XOUT
9
XIN
8
X-TAL TIMING GENERATOR
INTERPOLATOR
11
LRCHO
12
ADATAO
14
BCKO
MDAT
37
MCK
38
MLT
36
CPU INTERFACE
TRACK COUNTER
TRCNT
69
/ISTAT
68
DIGITAL FILTER & DE-EMPH
77
BCKI
67
ADATAI
60
LRCHI
24
EMPH
MODE SELECTOR
DIGITAL OUTPUT
D/A CONVERTER
17
VREFL1
22
VREFH1
61
XTALSEL
62
TEST0
63
CDROM
65
TEST1
7
DATX
19
RCHOUT
20
LCHOUT

SPEAKER SYSTEM

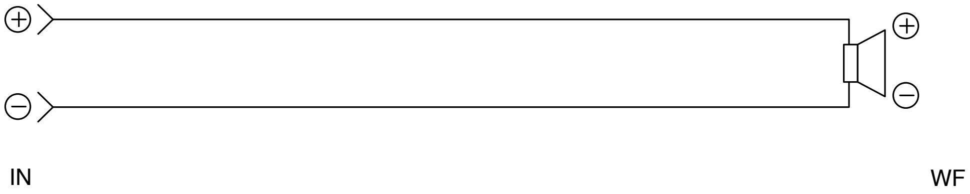
MODEL: FE-171E



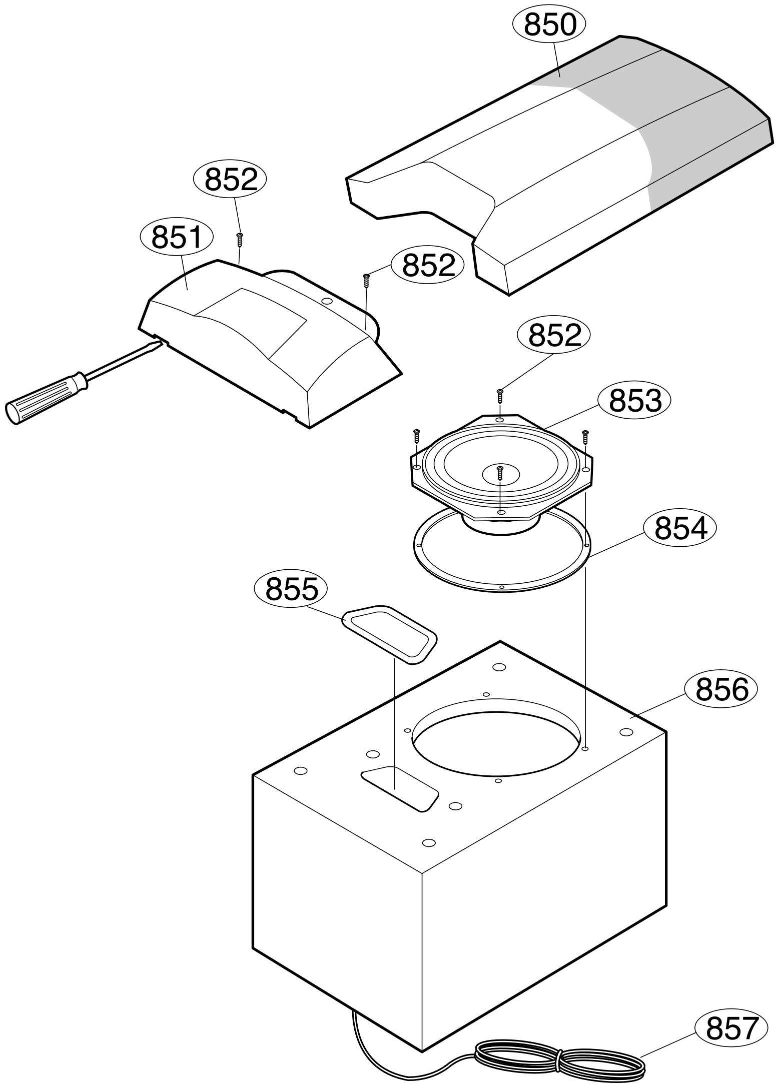
SPECIFICATION

- TYPE : BASS REFLEX 1 WAY 1 SPEAKER SYSTEM
- SPEAKER SYSTEM : WOOTER 100mm(4”)
- FREQUENCY RESPONSE : 90Hz~20.000Hz
- IMPEDANCE : 4Ω
- S.P.L. : 86dB/W(1m)
- RATED INPUT POWER : 5W
- MAX. INPUT POWER : 10W
- DIMENSION NET : 148(W) x 240(H) x 183(D)mm
- WEIGHT NET : 1.52kg

SCHEMATIC DIAGRAM



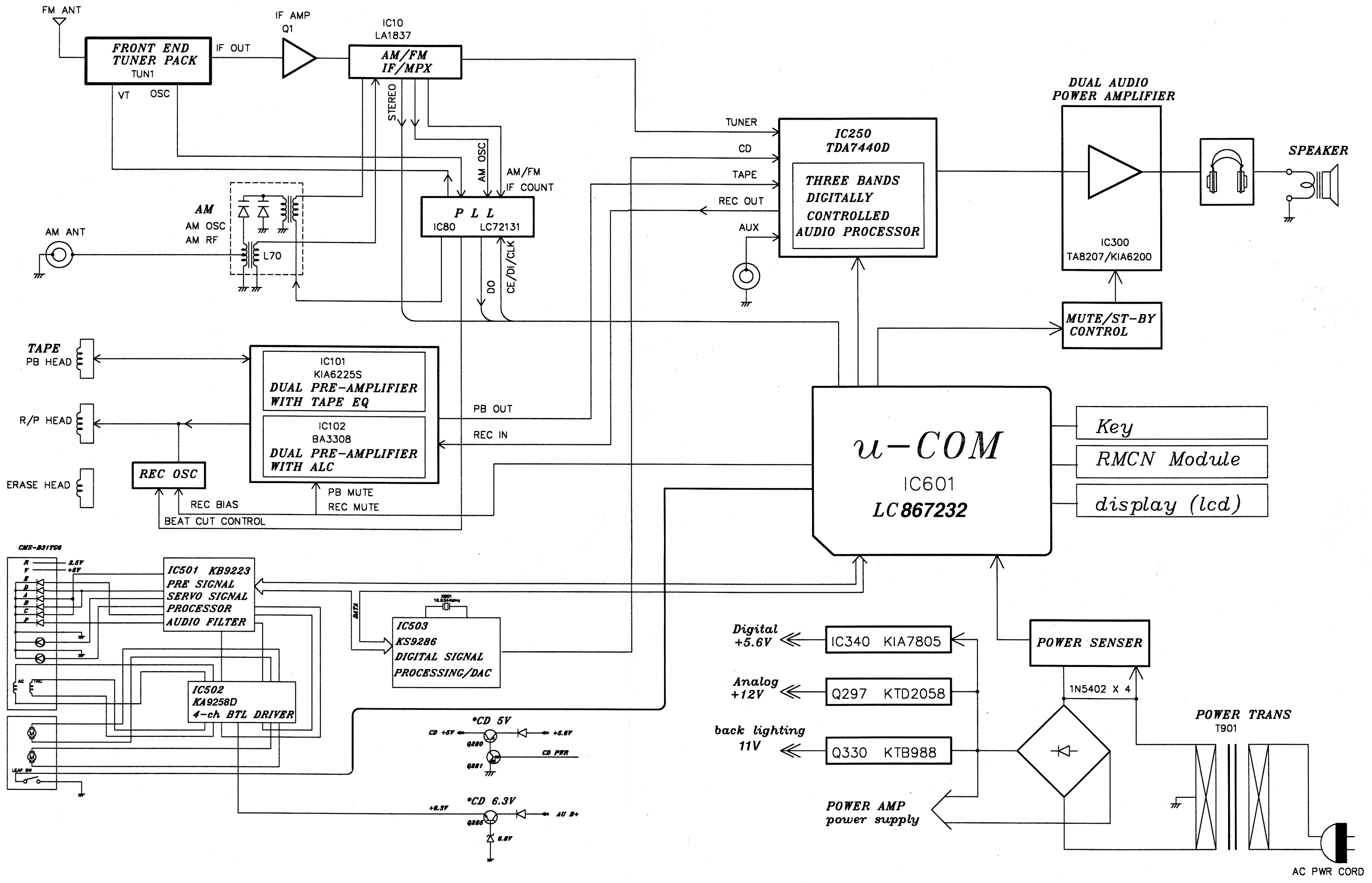
EXPLODED VIEW/PARTS LIST



RUN DATE : 03.MARCH.2003

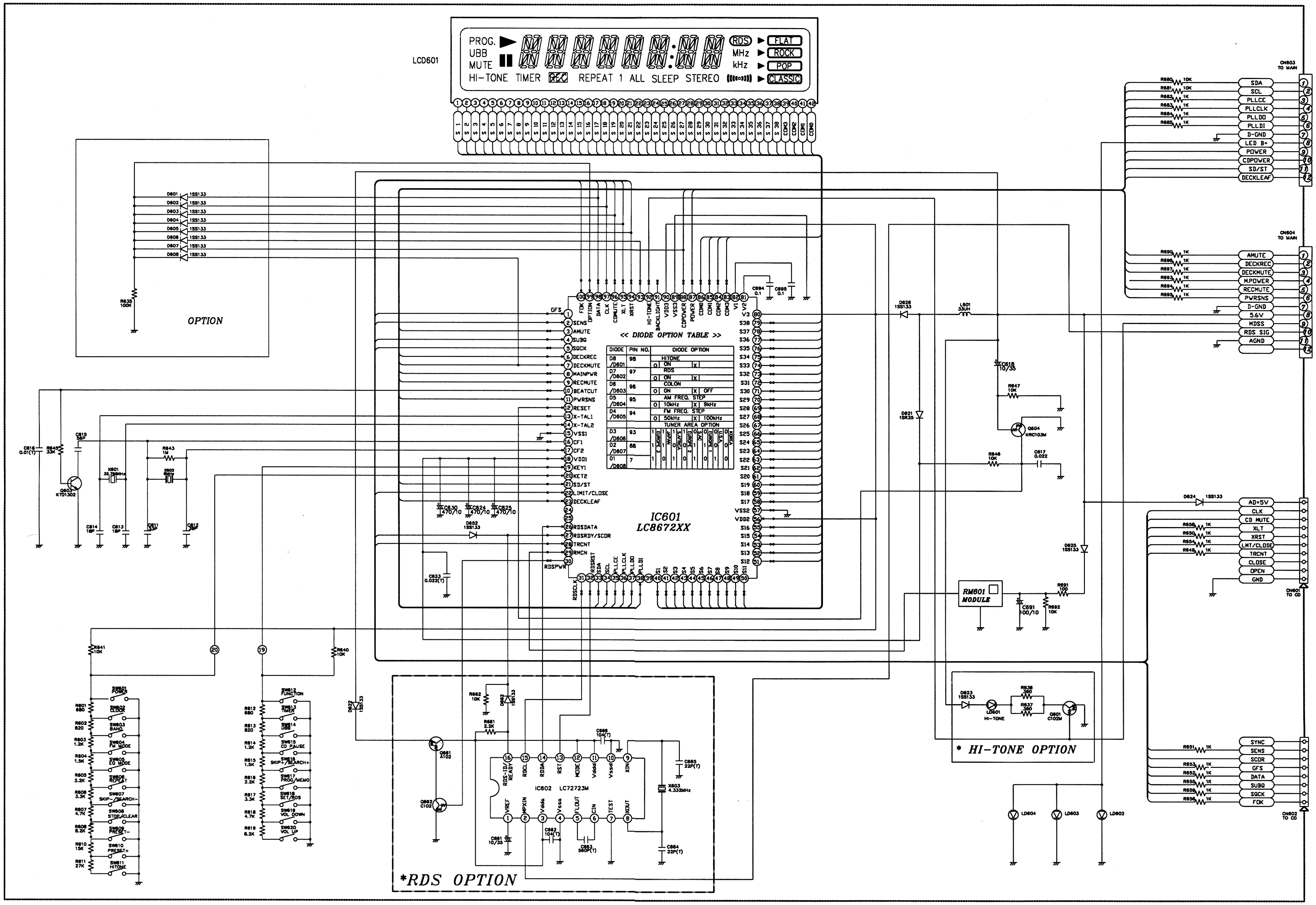
LOCA.NO.	PART NO	DESCRIPTION	SPECIFICATION	REMARK
850	3701SM0016C	NET ASSY	FE-171E(FRAME/JERSEY)(LGEES)	
851	3720SMM033C	PANEL	FRONT(FE-171E) LGEES	
852	353M050C	SCREW	BH 3.5X16 FBK	
853	6400SCSE04A	SPEAKER,FULLRANGE	CW-40SB05L SAMMI 4-0 OHM 5/10	
854	4766SMN030A	FELT	W/F(FE-216E/170E) BLACK	
855	4766SMN031A	FELT	DUCT(FE-216E/170E) BLACK	
856	3091SMW025C	CABINET ASSY	FE-218E(LGEES)	
857	6852SCK004A	CORD,A/V	FE-M100E , 0.16 * 18/2C (CORD	

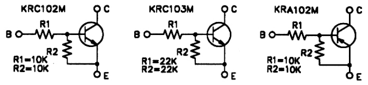
BLOCK DIAGRAM


FM ANT
FRONT END TUNER PACK
TUN1
VT
OSC
IF OUT
IF AMP
Q1
IC10
LA1837
AM/FM IF/MPX
STEREO
AM OSC
AM/FM IF COUNT
P L L
IC80
LC72131
DO
CE/DI/CLK
AM
AM OSC
AM RF
L70
AM ANT
TUNER
CD
TAPE
REC OUT
AUX
IC250
TDA7440D
THREE BANDS DIGITALLY CONTROLLED AUDIO PROCESSOR
DUAL AUDIO POWER AMPLIFIER
IC300
TA8207/KIA6200
SPEAKER
MUTE/ST-BY CONTROL
TAPE
PB HEAD
R/P HEAD
ERASE HEAD
IC101
KIA6225S
DUAL PRE-AMPLIFIER WITH TAPE EQ
IC102
BA3308
DUAL PRE-AMPLIFIER WITH ALC
PB OUT
REC IN
REC OSC
REC BIAS
PB MUTE
REC MUTE
BEAT CUT CONTROL
u-COM
IC601
LC867232
Key
RMCN Module
display (lcd)
CMS-B31TC6
R
V
2.5V
+5V
E
D
A
B
C
F
AC
TAC
LEAF SW
IC501 KB9223
PRE SIGNAL
SERVO SIGNAL
PROCESSOR
AUDIO FILTER
DATA
X801
16.9344MHz
IC503
KS9286
DIGITAL SIGNAL
PROCESSING/DAC
IC502
KA9258D
4-ch BTL DRIVER
*CD 5V
CD +5V
Q280
+5.6V
Q281
CD PWR
*CD 6.3V
+6.3V
Q285
AU B+
6.8V
Digital +5.6V
IC340 KIA7805
Analog +12V
Q297 KTD2058
back lighting 11V
Q330 KTB988
POWER AMP power supply
POWER SENSER
1N5402 X 4
POWER TRANS
T901
AC PWR CORD

SCHEMATIC DIAGRAMS

• FRONT & KEY CIRCUIT


LCD601
PROG.
UBB
MUTE
HI-TONE TIMER REC REPEAT 1 ALL SLEEP STEREO
RDS
MHz
kHz
FLAT
ROCK
POP
CLASSIC
OPTION
D601 1SS133
D602 1SS133
D603 1SS133
D604 1SS133
D605 1SS133
D606 1SS133
D607 1SS133
D608 1SS133
R635 100K
IC601
LC8672XX
<< DIODE OPTION TABLE >>
DIODE
PIN NO.
DIODE OPTION
HITONE
RDS
COLON
AM FREQ. STEP
FM FREQ. STEP
TUNER AREA OPTION
GFS
SENS
AMUTE
SUBQ
SQCK
DECKREC
DECKMUTE
MAINPWR
RECMUTE
BEATCUT
PWRSNS
RESET
X-TAL1
X-TAL2
VSS1
CF1
CF2
VDD1
KEY1
KEY2
SD/ST
LIMIT/CLOSE
DECKLEAF
RDSDATA
RDSRDY/SCDR
TRCNT
RMCN
RDSPWR
X601 32.768KHz
X602 8MHz
Q603 KTD1302
CN603 TO MAIN
SDA
SCL
PLLCE
PLLCLK
PLLDO
PLLDI
D-GND
LED B+
POWER
CDPOWER
SD/ST
DECKLEAF
TO MAIN
CN604 TO MAIN
AMUTE
DECKREC
DECKMUTE
M.POWER
RECMUTE
PWRSNS
D-GND
5.6V
MDSS
RDS SIG
AGND
TO MAIN
L601 33uH
Q604 KRC103M
RM601 MODULE
AD+5V
CLK
CD MUTE
XLT
XRST
LMT/CLOSE
TRCNT
CLOSE
OPEN
GND
CN601 TO CD
TO CD MAIN
SYNC
SENS
SCOR
GFS
DATA
SUBQ
SQCK
FOK
CN602 TO CD
TO CD MAIN
* HI-TONE OPTION
LD601 HI-TONE
Q601 C102M
LD604
LD603
LD602
*RDS OPTION
IC602 LC72723M
X603 4.332MHz
Q661 A102
Q662 C102
SW601 POWER
SW602 CLOCK
SW603 BAND
SW604 FM MODE
SW605 EQ MODE
SW606 REPEAT
SW607 SKIP-/SEARCH-
SW608 STOP/CLEAR
SW609 PRESET-
SW610 PRESET+
SW611 HITONE
SW612 FUNCTION
SW613 TIMER
SW614 UBB
SW615 CD_PAUSE
SW616 SKIP+/SEARCH+
SW617 PROG/MEMO
SW618 SET/RDS
SW619 VOL DOWN
SW620 VOL UP
R641 10K
R640 10K


KRC102M
R1=10K
R2=10K
KRC103M
R1=22K
R2=22K
KRA102M
R1=10K
R2=10K
B
C
E
R1
R2

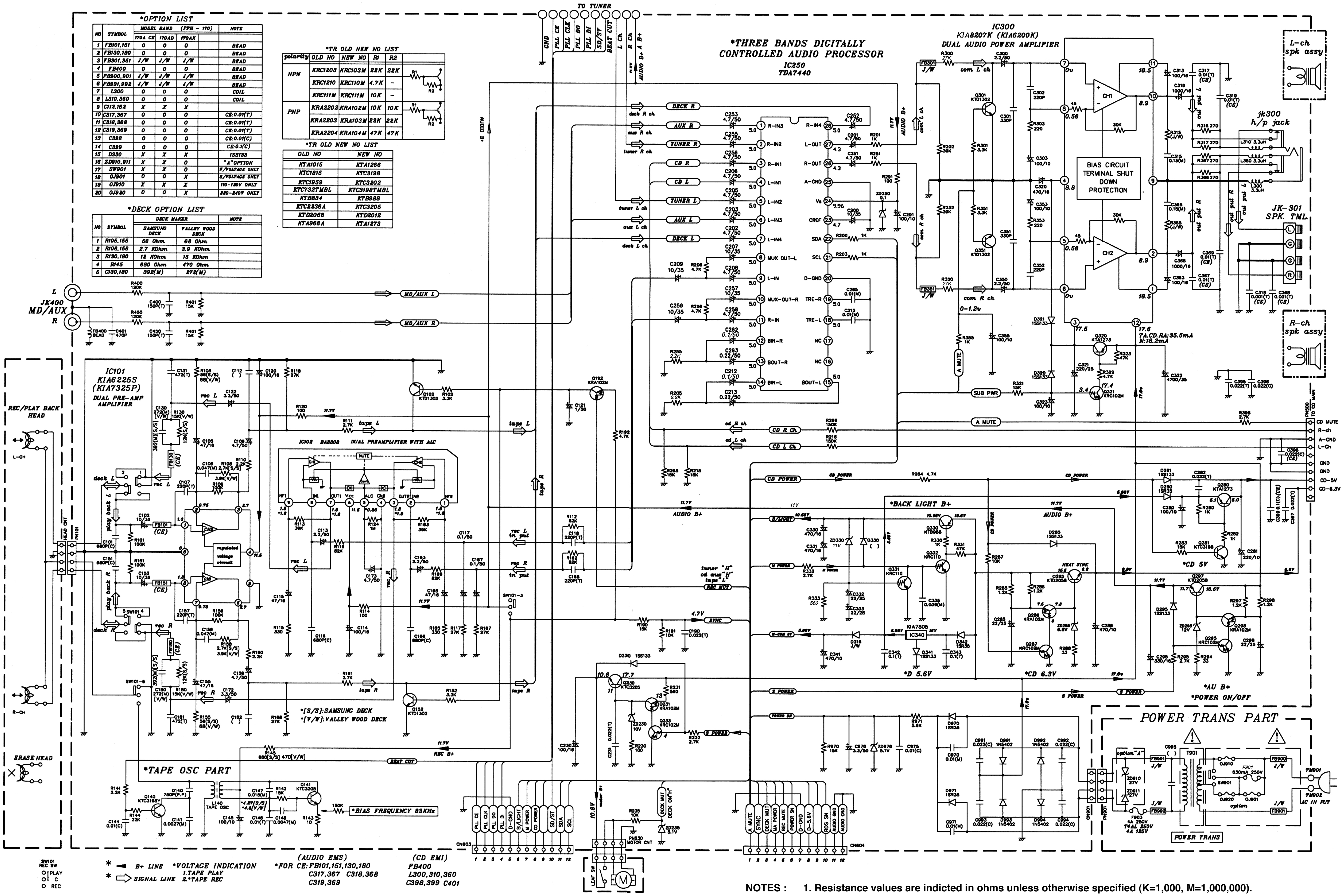
NOTES :

1. Resistance values are indicted in ohms unless otherwise specified (K=1,000, M=1,000,000).
2. Capacitance values are shown in microfarads unless otherwise (P=MICRO-MICRO FARADS).
3. Schematic diagram for this model are subject to change for improvement without prior notice.

• AMP & DECK CIRCUIT

NOTE: Warning
⚠ Parts that are shaded are critical With respect to risk of fire or electrical shock.

NOTE:
1. Shaded(■) parts are critical for safety.Replace only with specified part number.
2. Voltages are DC-measured with a digital voltmefer during Play mode.


TO TUNER
*THREE BANDS DIGITALLY CONTROLLED AUDIO PROCESSOR
IC250
TDA7440
IC300
KIA6207K (KIA6200K)
DUAL AUDIO POWER AMPLIFIER
BIAS CIRCUIT TERMINAL SHUT DOWN PROTECTION
L-ch spk assy
R-ch spk assy
jk300 h/p jack
JK-301 SPK TML
JK400 MD/AUX
IC101
KIA6225S
(KIA7325P)
DUAL PRE-AMP AMPLIFIER
IC102 BA3308 DUAL PREAMPLIFIER WITH ALC
REC/PLAY BACK HEAD
ERASE HEAD
*TAPE OSC PART
*BIAS FREQUENCY 83KHz
*[S/S]:SAMSUNG DECK
*[V/W]:VALLEY WOOD DECK
*BACK LIGHT B+
AUDIO B+
*CD 5V
*D 5.6V
*CD 6.3V
*AU B+
*POWER ON/OFF
POWER TRANS PART
POWER TRANS
AC IN PUT
CN603
CN604
CN900
MOTOR CNT

*OPTION LIST

NO	SYMBOL	MODEL BAND (FFH - 170)				NOTE
		170A CE	170AD	170AX		
1	FB101,151	0	0	0		BEAD
2	FB130,180	0	0	0		BEAD
3	FB301,351	J/W	J/W	J/W		BEAD
4	FB400	0	0	0		BEAD
5	FB900,901	J/W	J/W	J/W		BEAD
6	FB991,992	J/W	J/W	J/W		BEAD
7	L300	0	0	0		COIL
8	L310,360	0	0	0		COIL
9	C112,162	X	X	X		
10	C317,367	0	0	0		CE:0.01(T)
11	C318,368	0	0	0		CE:0.01(T)
12	C319,369	0	0	0		CE:0.01(T)
13	C398	0	0	0		CE:0.01(C)
14	C399	0	0	0		CE:0.1(C)
15	D330	X	X	X		1SS133
16	ZD910,911	X	X	0		"A"OPTION
17	SW901	X	X	0		W/VOLTAGE ONLY
18	OJ901	0	0	X		S/VOLTAGE ONLY
19	OJ910	X	X	X		110-120V ONLY
20	OJ920	0	0	X		220-240V ONLY

*DECK OPTION LIST

NO	SYMBOL	DECK MAKER		NOTE
		SAMSUNG DECK	VALLEY WOOD DECK	
1	R105,155	56 Ohm	68 Ohm	
2	R108,158	2.7 KOhm	3.9 KOhm	
3	R130,180	12 KOhm	15 KOhm	
4	R145	680 Ohm	470 Ohm	
5	C130,180	392(M)	272(M)	

*TR OLD NEW NO LIST

polarity	OLD NO	NEW NO	R1	R2
NPN	KRC1203	KRC103M	22K	22K
	KRC1210	KRC110M	4.7K	–
	KRC111M	KRC111M	10K	–
PNP	KRA2202	KRA102M	10K	10K
	KRA2203	KRA103M	22K	22K
	KRA2204	KRA104M	47K	47K

*TR OLD NEW NO LIST

OLD NO	NEW NO
KTA1015	KTA1266
KTC1815	KTC3198
KTC1959	KTC3202
KTC732TMBL	KTC3198TMBL
KTB834	KTB988
KTC2236A	KTC3205
KTD2058	KTD2012
KTA966A	KTA1273

SW101
REC SW
○ PLAY
○ C
○ REC

* ◄ B+ LINE
* ⇨ SIGNAL LINE

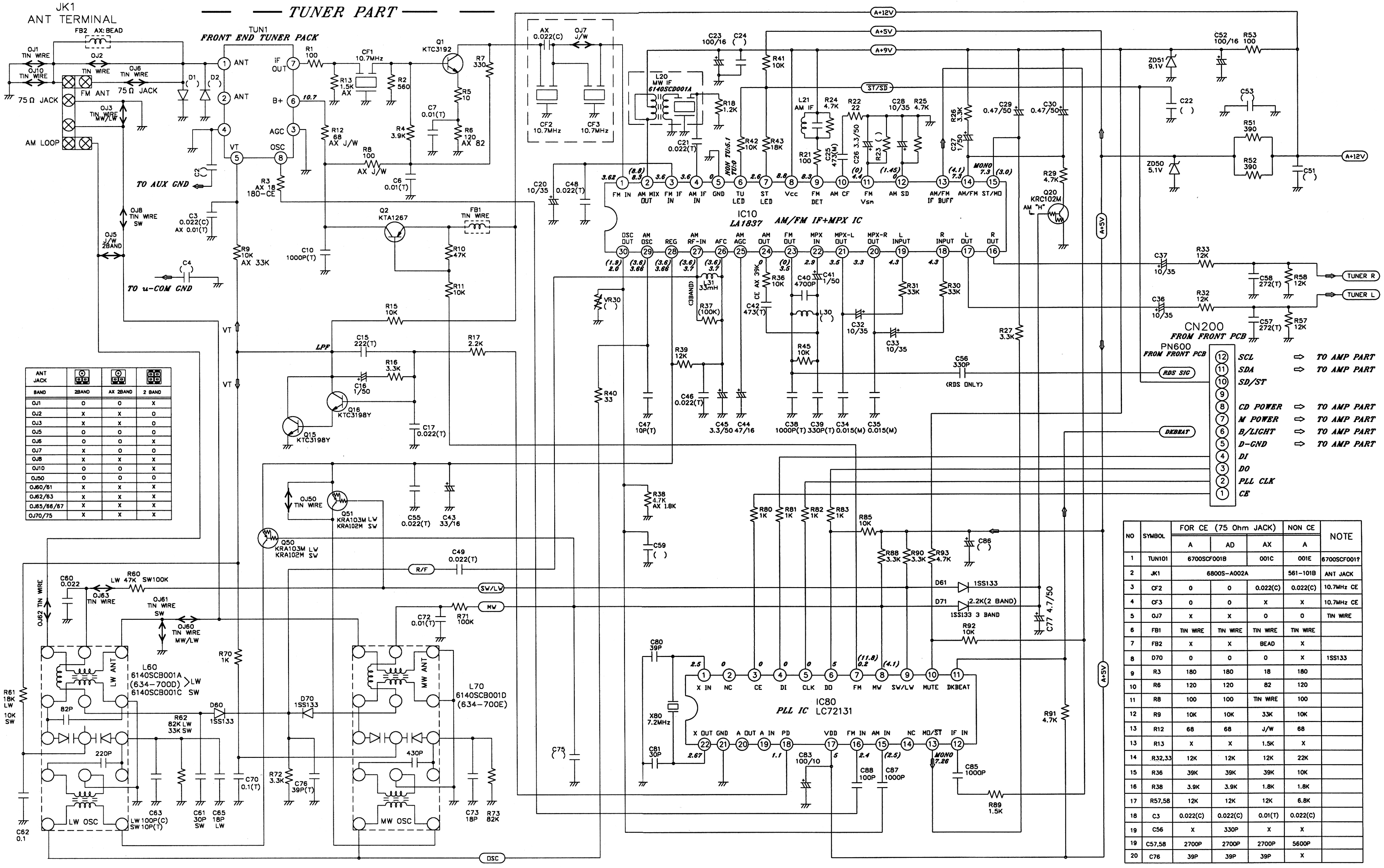
*VOLTAGE INDICATION
1.TAPE PLAY
2.*TAPE REC

(AUDIO EMS)
*FOR CE: FB101,151,130,180
C317,367 C318,368
C319,369

(CD EMI)
FB400
L300,310,360
C398,399 C401

NOTES :
1. Resistance values are indicted in ohms unless otherwise specified (K=1,000, M=1,000,000).
2. Capacitance values are shown in microfarads unless otherwise (P=MICRO-MICRO FARADS).
3. Schematic diagram for this model are subject to change for improvement without prior notice.

• TUNER CIRCUIT


JK1
ANT TERMINAL
FB2 AX:BEAD
TUNER PART
TUN1
FRONT END TUNER PACK
Q1
KTC3192
CF1
10.7MHz
ANT
IF OUT
B+
AGC
VT
OSC
75Ω JACK
FM ANT
AM LOOP
TO AUX GND
TO u-COM GND
Q2
KTA1267
FB1
TIN WIRE
LPF
Q15
KTC3198Y
Q16
KTC3198Y
Q50
KRA103M LW
KRA102M SW
Q51
KRA103M LW
KRA102M SW
L60
6140SCB001A (634-700D) LW
6140SCB001C SW
LW OSC
L70
6140SCB001D (634-700E)
MW OSC
D60
1SS133
D70
1SS133
CF2
10.7MHz
CF3
10.7MHz
L20
MW IF
6140SCD001A
IC10
LA1837
AM/FM IF+MPX IC
FM IN
AM MIX OUT
FM IF IN
AM IF IN
GND
TU LED
ST LED
Vcc
FM DET
AM CF
FM Vsm
AM SD
AM/FM IF BUFF
AM/FM ST/MO
OSC OUT
AM OSC
REG
AM RF-IN
AFC
AM AGC
AM OUT
FM OUT
MPX IN
MPX-L OUT
MPX-R OUT
L INPUT
R INPUT
L OUT
R OUT
Q20
KRC102M
ZD51
9.1V
ZD50
5.1V
A+12V
A+5V
A+9V
ST/SO
TUNER R
TUNER L
CN200
FROM FRONT PCB
PN600
FROM FRONT PCB
RDS SIG
DKBEAT
12 SCL ⇨ TO AMP PART
11 SDA ⇨ TO AMP PART
10 SD/ST
9
8 CD POWER ⇨ TO AMP PART
7 M POWER ⇨ TO AMP PART
6 B/LIGHT ⇨ TO AMP PART
5 D-GND ⇨ TO AMP PART
4 DI
3 DO
2 PLL CLK
1 CE
(RDS ONLY)
IC80
PLL IC LC72131
X IN
NC
CE
DI
CLK
DO
FM
MW
SW/LW
MUTE
DKBEAT
X OUT
GND
A OUT
A IN
PD
VDD
FM IN
AM IN
MO/ST
IF IN
X80
7.2MHz
D61
1SS133
D71
2.2K(2 BAND)
1SS133 3 BAND
R/F
SW/LW
MW
OSC

ANT JACK			
BAND	2BAND	AX 2BAND	2 BAND
OJ1	O	O	X
OJ2	X	X	O
OJ3	X	X	O
OJ5	O	O	O
OJ6	O	O	X
OJ7	X	O	O
OJ8	X	X	X
OJ10	O	O	X
OJ50	O	O	O
OJ60/61	X	X	X
OJ62/63	X	X	X
OJ65/66/67	X	X	X
OJ70/75	X	X	X

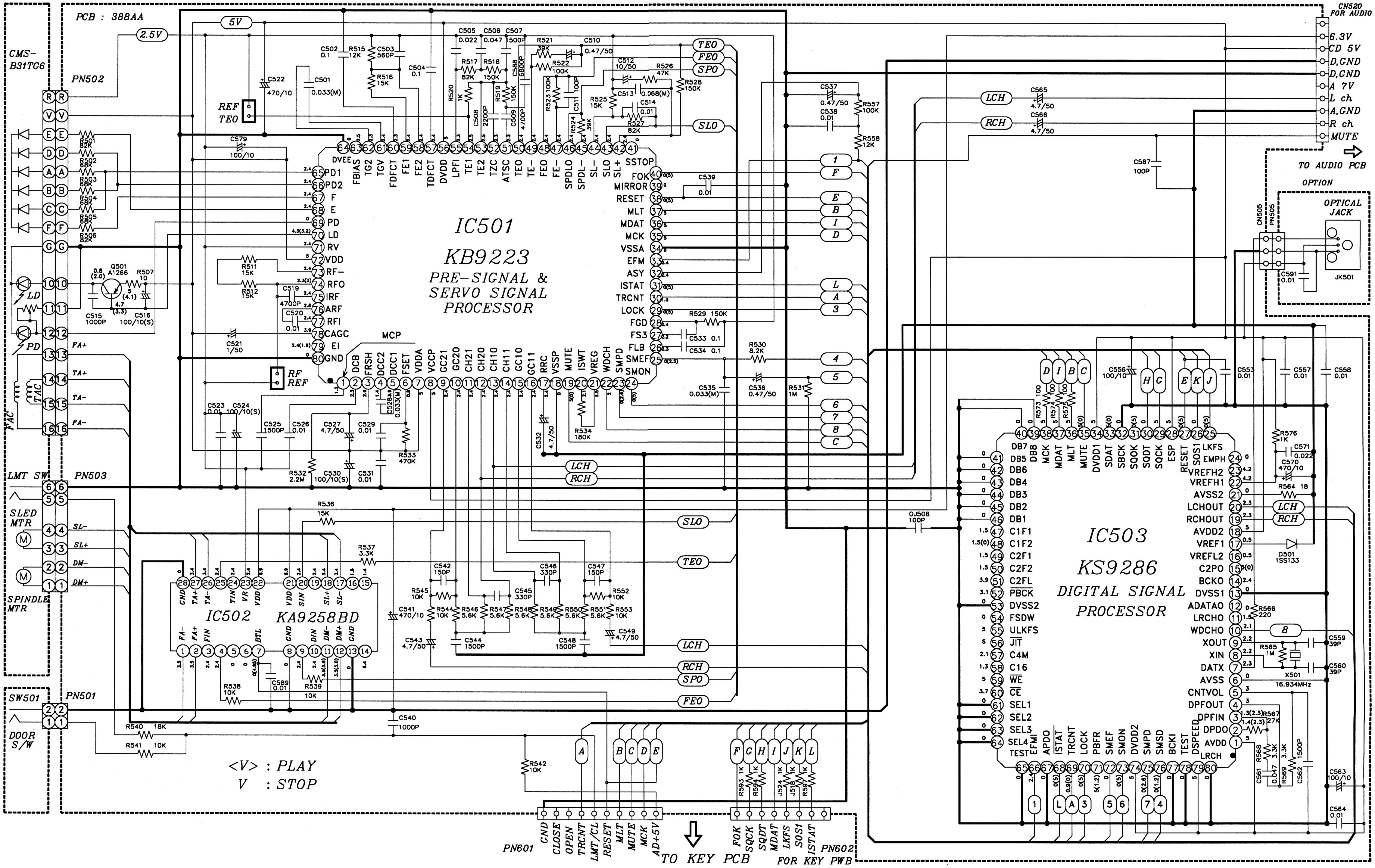
NO	SYMBOL	FOR CE (75 Ohm JACK)			NON CE	NOTE
		A	AD	AX	A	
1	TUN101	6700SCF001B		001C	001E	6700SCF001?
2	JK1	6800S-A002A			561-101B	ANT JACK
3	CF2	0	0	0.022(C)	0.022(C)	10.7MHz CE
4	CF3	0	0	X	X	10.7MHz CE
5	OJ7	X	X	0	0	TIN WIRE
6	FB1	TIN WIRE	TIN WIRE	TIN WIRE	TIN WIRE	
7	FB2	X	X	BEAD	X	
8	D70	0	0	0	X	1SS133
9	R3	180	180	18	180	
10	R6	120	120	82	120	
11	R8	100	100	TIN WIRE	100	
12	R9	10K	10K	33K	10K	
13	R12	68	68	J/W	68	
13	R13	X	X	1.5K	X	
14	R32,33	12K	12K	12K	22K	
15	R36	39K	39K	39K	10K	
16	R38	3.9K	3.9K	1.8K	1.8K	
17	R57,58	12K	12K	12K	6.8K	
18	C3	0.022(C)	0.022(C)	0.01(T)	0.022(C)	
19	C56	X	330P	X	X	
19	C57,58	2700P	2700P	2700P	5600P	
20	C76	39P	39P	39P	X	

**VOLTAGE INDICATION*
1.FM 2.( )AM

NOT USED : D1,D2 L30
VR30 R23
C2,22,24,43,51,53,59

NOTES :
1. **Resistance values are indicted in ohms unless otherwise specified (K=1,000, M=1,000,000).**
2. **Capacitance values are shown in microfarads unless otherwise (P=MICRO-MICRO FARADS).**
3. **Schematic diagram for this model are subject to change for improvement without prior notice.**

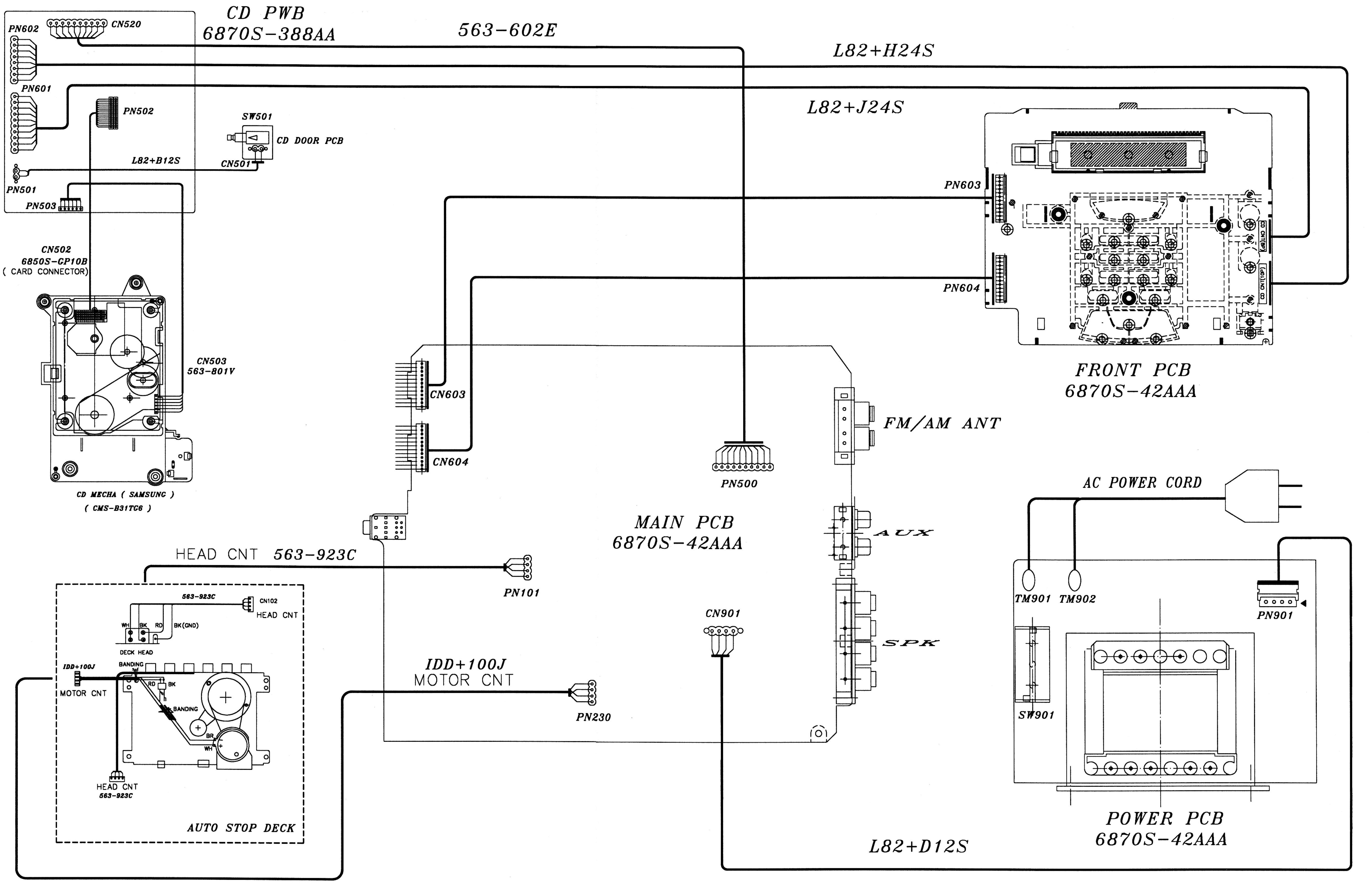
• CDP CIRCUIT


PCB : 388AA
CMS-B31TC6
PN502
PN503
PN501
PN601
PN602
LD
PD
FAC
TAC
LMT SW
SLED MTR
SPINDLE MTR
SW501
DOOR S/W
5V
2.5V
REF
TEO
RF
REF
MCP
Q501 A1266
IC501
KB9223
PRE-SIGNAL & SERVO SIGNAL PROCESSOR
IC502
KA9258BD
IC503
KS9286
DIGITAL SIGNAL PROCESSOR
TEO
FEO
SPO
SLO
LCH
RCH
CN520 FOR AUDIO
6.3V
CD 5V
D,GND
D,GND
A 7V
L ch
A,GND
R ch
MUTE
TO AUDIO PCB
OPTION
OPTICAL JACK
JK501
CN505
PN505
X501 16.934MHz
D501 1SS133
<V> : PLAY
V : STOP
GND
CLOSE
OPEN
TRCNT
LMT/CL
RESET
MLT
MUTE
MCK
AD+5V
TO KEY PCB
FOK
SQCK
SQDT
MDAT
LKFS
SOS1
ISTAT
FOR KEY PWB

NOTES :

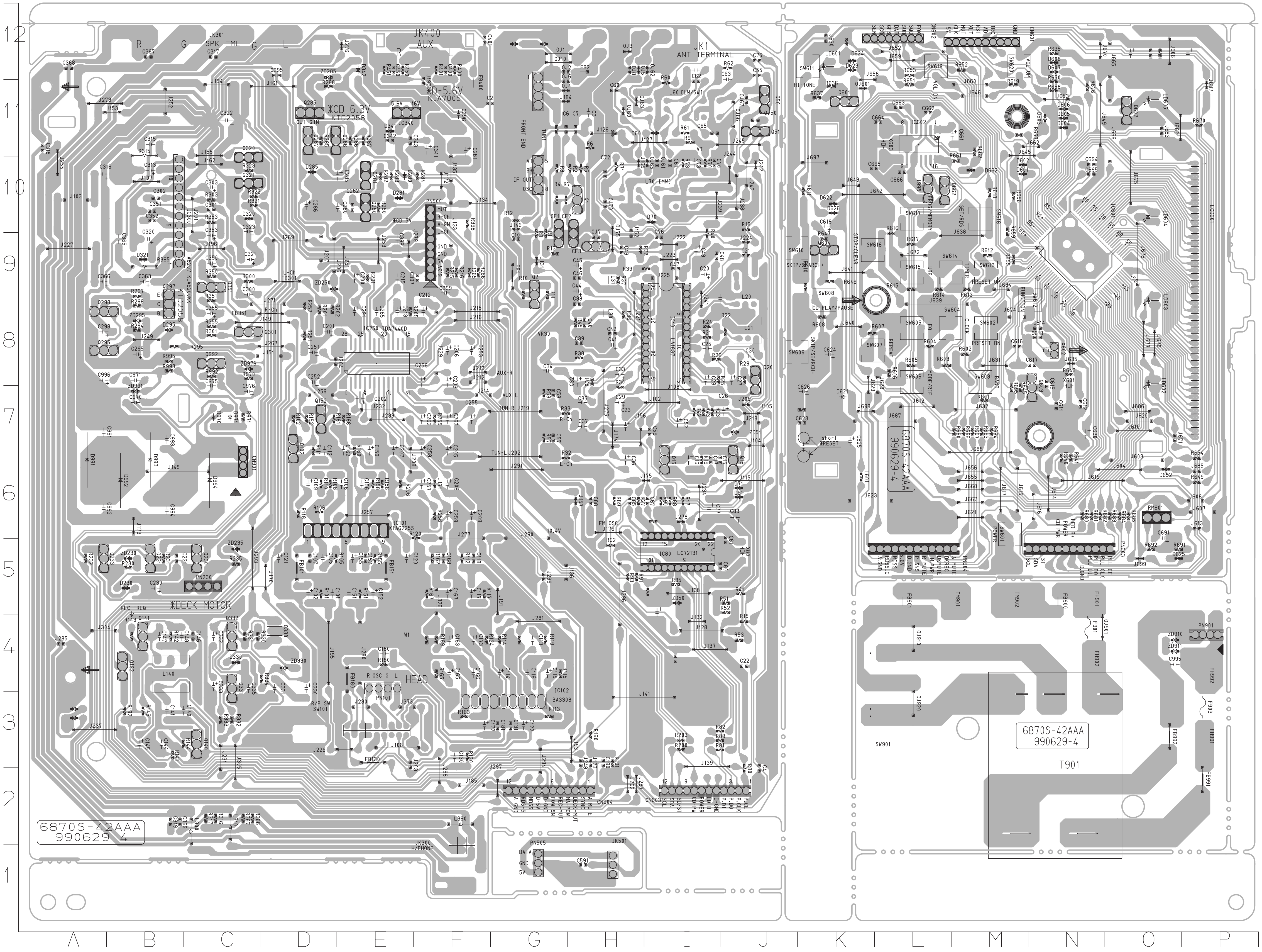
1. Resistance values are indicted in ohms unless otherwise specified (K=1,000, M=1,000,000).
2. Capacitance values are shown in microfarads unless otherwise (P=MICRO-MICRO FARADS).
3. Schematic diagram for this model are subject to change for improvement without prior notice.

WIRING DIAGRAM


CD PWB
6870S-388AA
563-602E
L82+H24S
L82+J24S
PN602
CN520
PN601
PN502
SW501
CD DOOR PCB
L82+B12S
CN501
PN501
PN503
CN502
6850S-CP10B
(CARD CONNECTOR)
CN503
563-801V
CD MECHA (SAMSUNG)
(CMS-B31TC6)
PN603
PN604
CD CNT(8P)
CD CNT(10P)
FRONT PCB
6870S-42AAA
CN603
CN604
PN500
FM/AM ANT
AUX
SPK
MAIN PCB
6870S-42AAA
HEAD CNT 563-923C
PN101
563-923C
CN102
HEAD CNT
WH
BK
RD
BK(GND)
DECK HEAD
IDD+100J
BANDING
MOTOR CNT
RD
BK
BANDING
BR
WH
HEAD CNT
563-923C
AUTO STOP DECK
IDD+100J
MOTOR CNT
PN230
CN901
AC POWER CORD
TM901
TM902
PN901
SW901
POWER PCB
6870S-42AAA
L82+D12S

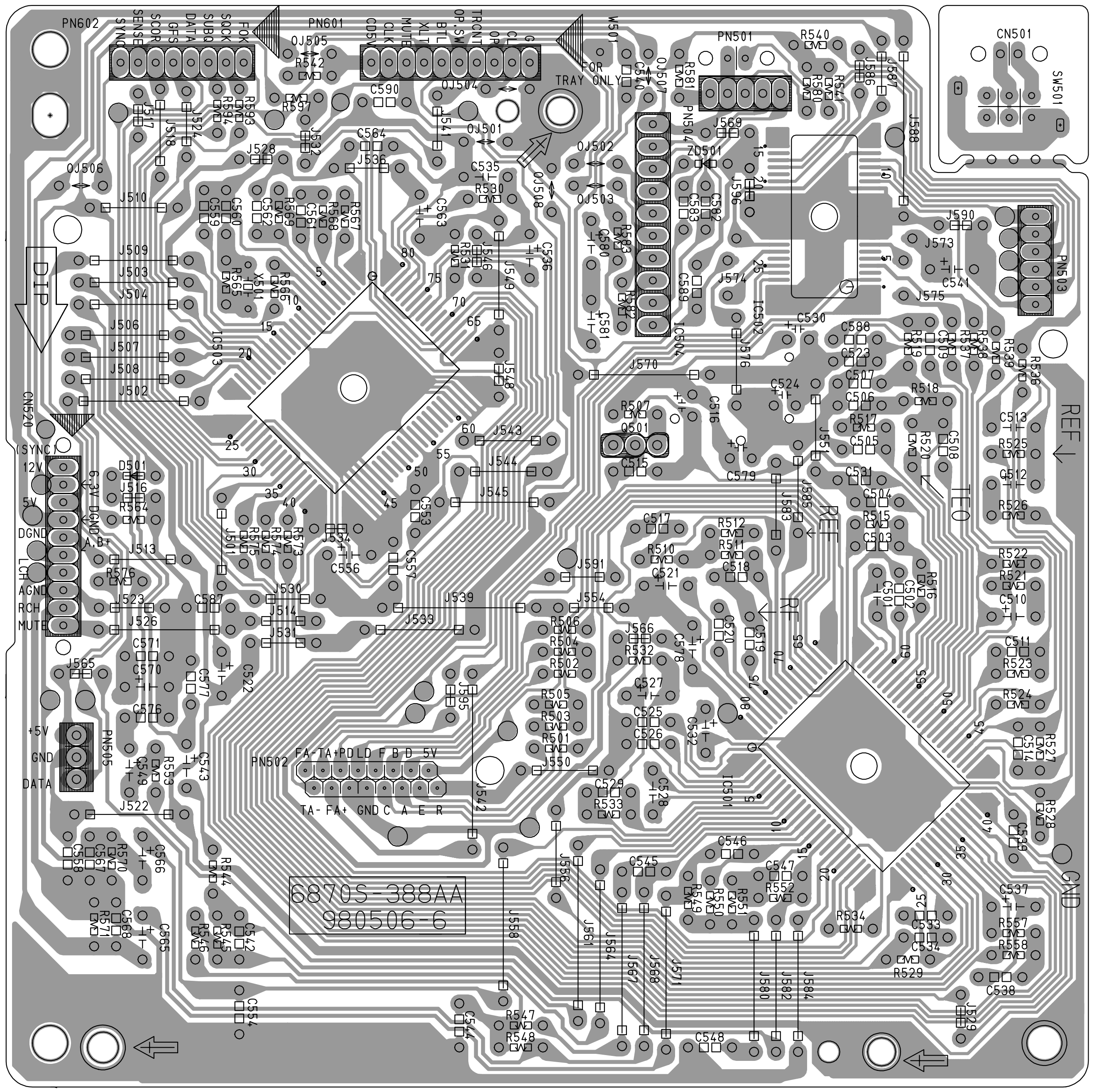
PCB LAYOUTS

• MAIN P.C BOARD


JK301 SPK TML
JK400 AUX
JK1 ANT TERMINAL
※CD 6.3V
KTD2058
※D+5.6V
KIA7805
FRONT END
TDA7440D
IC101 KIA6225S
IC102 BA3308
HEAD
※DECK MOTOR
REC FREQ
LC72131
JK300 H/PHONE
PN505
JK501
DATA
GND
5V
CNB04
CNB03
STOP/CLEAR
SKIP/SEARCH+
CD PLAY/PAUSE
SKIP/SEARCH-
REPEAT
PRESET UP
PRESET DN
FUNCTION
CLOCK
POWER
short ※RESET
6870S-42AAA
990629-4
T901
SW901
12
11
10
9
8
7
6
5
4
3
2
1
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P

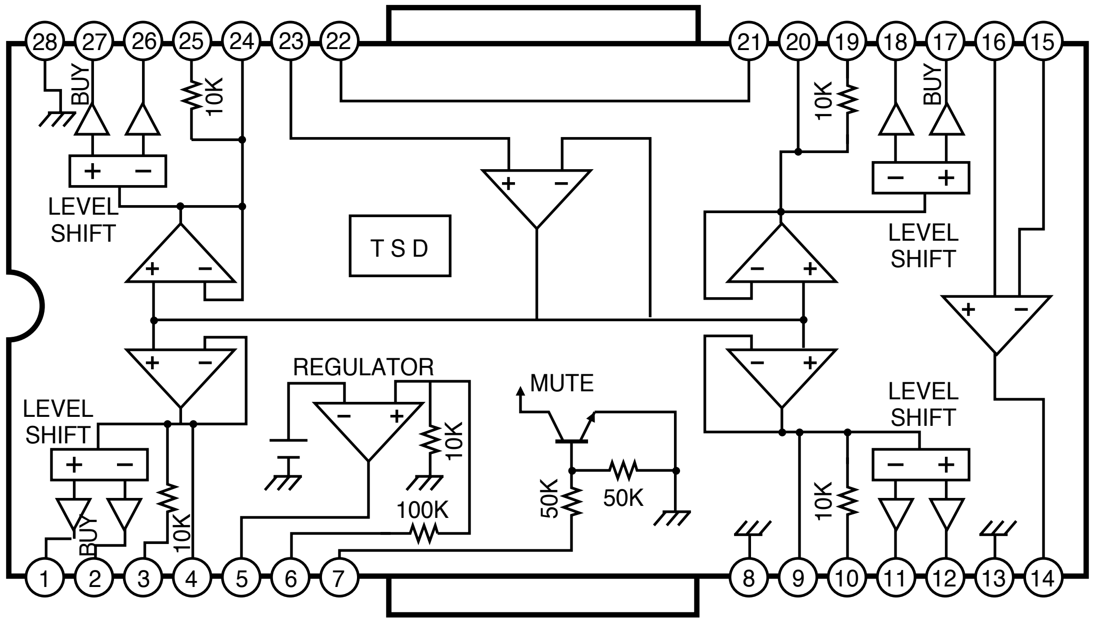
C173	F12
D120	A3
D121	A3

- **CDP P.C BOARD**

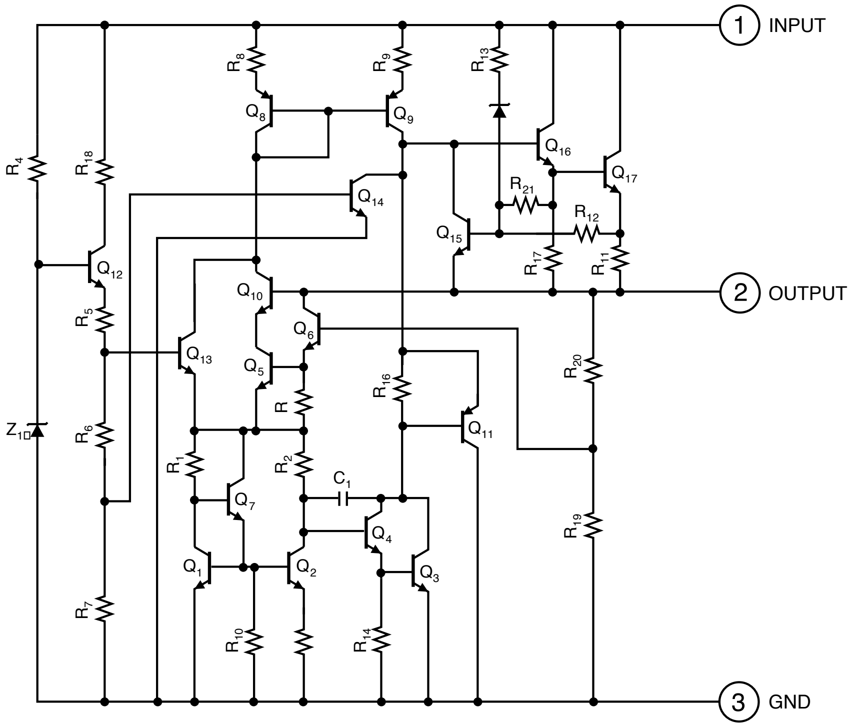

PN602
SYNC
SENSE
SCOR
SUBQ
DATA
GFS
FOK
PN601
CD5V
CLK
MUTE
XLT
BTL
TRCNT
OP_SW
CL
W501
FOR TRAY ONLY
PN501
CN501
SW501
PN503
DIP
REF
TEO
RF
GND
CN520
SYNC
12V
5V
DGND
LCH
AGND
RCH
MUTE
6.3V
DGND
A.B+
PN505
+5V
GND
DATA
PN502
FA- TA+ PD LD F B D 5V
TA- FA+ GND C A E R
IC501
IC502
IC503
IC504
6870S-388AA
980506-6

INTERNAL BLOCK DIAGRAM OF ICs

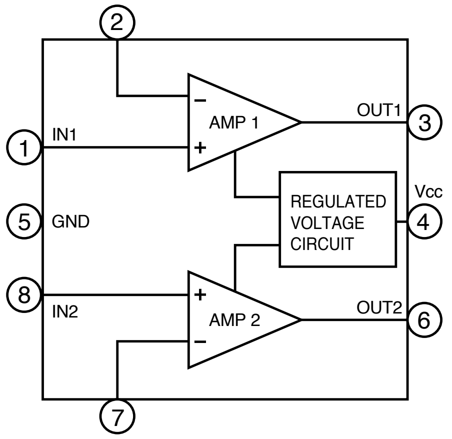
■ KA3010D


28
27
26
25
24
23
22
21
20
19
18
17
16
15
BUY
10K
LEVEL SHIFT
TSD
10K
BUY
LEVEL SHIFT
REGULATOR
MUTE
LEVEL SHIFT
LEVEL SHIFT
BUY
10K
10K
100K
50K
50K
10K
1
2
3
4
5
6
7
8
9
10
11
12
13
14

■ KIA7805 P/PI ~ KIA7824P/PI

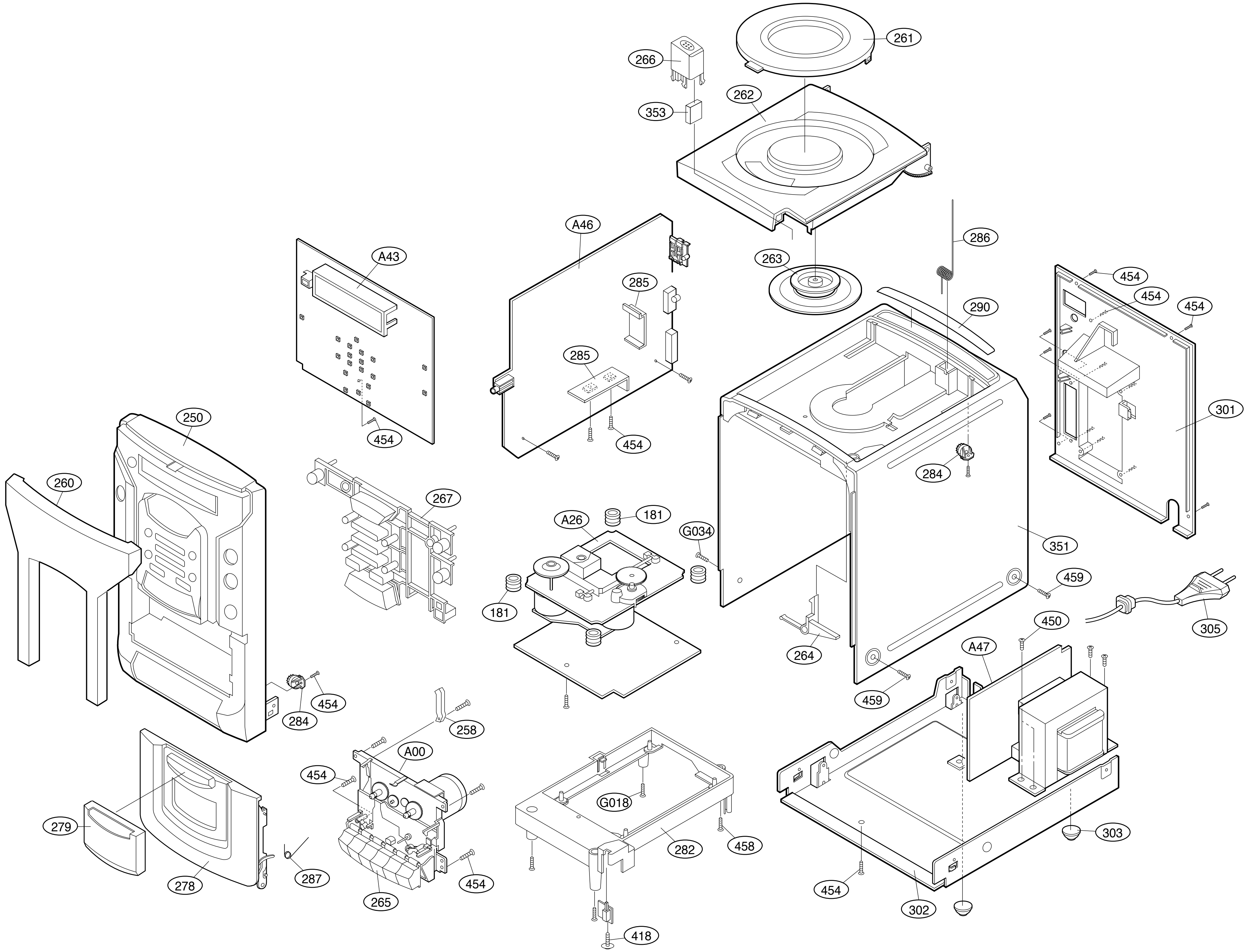

1 INPUT
2 OUTPUT
3 GND
R4
R18
R8
R9
R13
Q8
Q9
Q16
Q17
Q14
R21
R12
Q15
R17
R11
Q12
Q10
Q6
R5
Q13
Q5
R
R16
R20
Q11
Z1D
R6
R1
R2
C1
Q7
Q4
R19
Q1
Q2
Q3
R7
R10
R14

■ KIA6225S


2
1
IN1
AMP 1
OUT1
3
5
GND
REGULATED VOLTAGE CIRCUIT
Vcc
4
8
IN2
AMP 2
OUT2
6
7

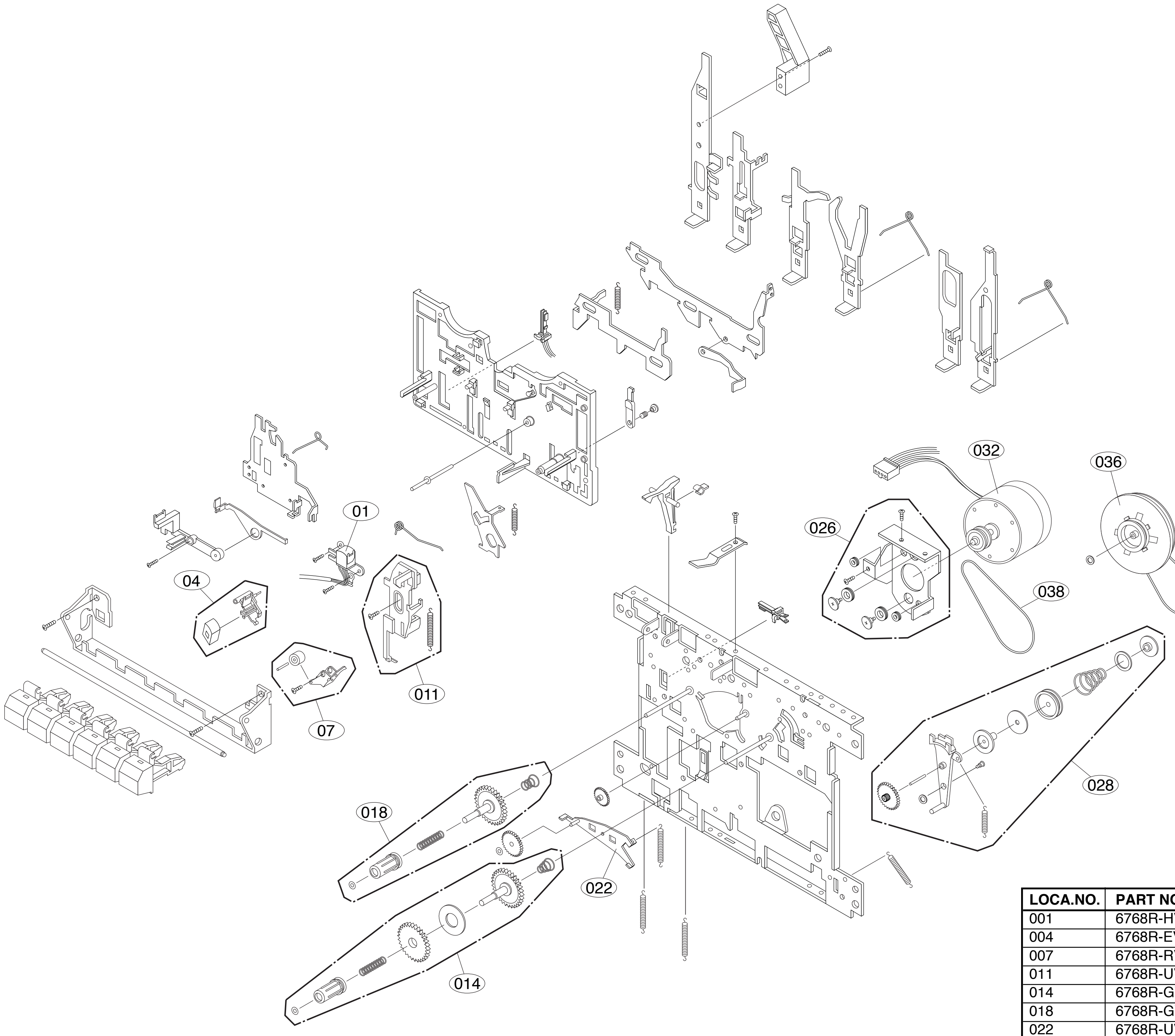
EXPLODED VIEW/PARTS LIST

• CABINET



266
261
353
262
A46
286
A43
263
285
454
454
290
454
285
301
250
454
454
284
260
267
181
A26
G034
351
459
181
450
305
A47
264
454
459
284
258
A00
454
303
G018
279
458
282
287
454
454
278
265
302
418

• TAPE DECK MECHANISM: AUTO STOP DECK



LOCA.NO.	PART NO	DESCRIPTION	SPECIFICATION
001	6768R-HV01C	DECK MECHANISM PARTS	AP-4211(P.C.B) V/WOOD HEAD CS-
004	6768R-EV01A	DECK MECHANISM PARTS	A-13 V/WOOD HEAD ASSY CS-21 SE
007	6768R-RV01A	DECK MECHANISM PARTS	A-04 V/WOOD ROLLER CS-21 SERIE
011	6768R-UV01D	DECK MECHANISM PARTS	A-15 V/WOOD UNIT CS-21 SERIES
014	6768R-GV01B	DECK MECHANISM PARTS	A-07-3 V/WOOD GEAR CS-21 SERIE
018	6768R-GV01A	DECK MECHANISM PARTS	A-06 V/WOOD GEAR CS-21 SERIES
022	6768R-UV01A	DECK MECHANISM PARTS	A-01A V/WOOD UNIT CS-21 SERIES
026	6768R-UV01B	DECK MECHANISM PARTS	A-12 V/WOOD UNIT CS-21 SERIES
028	6768R-AV01A	DECK MECHANISM PARTS	A-09 V/WOOD ARM CS-21 SERIES R
032	6768R-QV01A	DECK MECHANISM PARTS	A-12 V/WOOD MOTOR(ASSY) CS-21
036	6768R-JV01B	DECK MECHANISM PARTS	A-11(A) V/WOOD PULLEY/FLYWHEEL
038	6768R-BV01B	DECK MECHANISM PARTS	A-14A V/WOOD BELT/FELT CS-21 S